AUTHOR INDEX

A

Abdel Malek, A. A., 235
Aboim, A. N., 148
Adam, Brother, 167, 174, 176
Adams, A. L., 368
Adams, R. E., 100
Adler, S., 257
Afzal, M., 273
Ahmed, D. D., 435, 436, 437
Ahmed, M. K., 392
Ahrens, W., 138
Akao, A., 67
Akerberg, E., 176
Albert, A. R., 437
Albritton, E. C., 57, 59
Alden, C. H., 292
Alexander, R. D., 89, 90, 100
Alfert, M., 154
Allee, W. C., 210
Allegret, P., 82, 83, 84
Allen, A. A., 313
Allen, H. W., 292, 305
Allen, M. D., 68, 98, 100
Allen, N., 393
Allen, N. N., 423
Allen, R. E., 269, 284
Allen, W. R., 383
Allen, W. W., 428, 429
Allfrey, V. G., 79
Allison, J. L., 439
Altena, C. O. van R., see Regteren Altena, C. O. van
Amos, J., 469, 471
Ander, K., 213
Anderson, C. W., 472
Anderson, D. B., 68
Anderson, L. D., 366, 367, 383, 387, 424, 425, 431
Anderson, R. F., 453
Andersson, I., 384
Andrewartha, H. G., 110, 111, 112, 115, 116, 117, 118, 121, 122, 123, 124, 125, 126, 127, 128, 129, 132, 209, 210
Angulo-Busquets, M., 278
Ankersmit, G. W., 283
Anstey, D., 416
Anthon, H., 189
Antony, J., 315, 317, 318
App, B. A., 431, 434, 437, 438, 440
Apple, J. W., 381
Arbuthnot, K. D., 278
Armitage, H. M., 302
Armstrong, T., 356, 358, 359, 360, 361
Arnaudo, M., 78
Arnold, C. H., 367
Arnold, W. J., 143, 144, 146
Arriaga, H. O., 271
Arrow, G. J., 311
Ashdown, D., 268, 276
Askew, W. L., 383
Atkins, E. L., Jr., 366
Auclair, J. L., 70, 280
Audy, J. R., 368
Augustinnson, K. B., 1, 11
Austin, M. D., 387
Autrum, H., 90, 93, 95, 96
Awibowo, R., 295
Azambuja, C. E. A., 246

B

Babers, F. H., 12, 137
Backs, R. H., 58, 60
Bacon, O. G., 368
Baerg, W. J., 314
Bailey, L., 358, 366
Bailey, V. A., 132
Baines, S., 43, 45, 46, 49, 50
Baird, A. B., 294
Baker, E. W., 366, 367, 368, 369
Baker, W. C., 407, 413
Balachowsky, A., 214, 220
Balch, R. E., 449-68; 449, 450, 451, 453, 454, 455, 457, 458, 459, 460, 461, 462, 463, 464
Baldoni, R., 278, 381
Balduf, W. V., 328
Baldwin, W. F., 68
Ball, E. D., 341, 347, 422, 423
Ball, G. E., 223
Ballard, W. W., 268, 272
Baltzer, F., 169
Barber, G. W., 356
Barber, H. J., 369
Barber, I. A., 367
Barber, J. S., 68
Barker, J. S., 362, 363
Barkley, J. H., 355, 371
Barlow, C. A., 252
Barlow, F., 402, 404, 405, 416
Barnes, M. M., 357, 366, 371
Barnes, O. L., 267
Barnhart, C. S., 33
Barr, A. R., 243
Barretto, M. P., 257
Barter, G. W., 450, 462, 463
Bartlett, B. R., 366
Bartoloni, P., 389
Bates, M., 251, 252
Batey, M. M., 39, 50
Bath, J. G., 367
Batte, E. G., 408
Batten, E. T., 423
Baud, L., 83, 84
Baudisch, K., 40, 41, 50
Bauer, H., 150, 154
Bawden, F. C., 479
Baxter, E. K., 435
Beal, J. A., 449, 450, 452, 455
Beament, J., 149
Beams, H. W., 23, 31
Beard, R. L., 327
Becher, E., 258
Beck, S. D., 58, 59, 61, 62, 63, 64, 66, 67, 68, 69, 280, 281
Beckel, W. E., 251, 252
Beckham, C. M., 383
Bedford, E. C. G., 304
Beer, G. R. de, 202
Beidler, L. M., 29
Beier, M., 219
Beingolea, O., 301
Beirne, B. P., 214, 221
Bekku, H., 232
Belkin, J. N., 222
Bell, M. E., 279
Belton, B., 6
Belton, P., 94
Belyea, R. M., 452, 464
Benarr, J., 269
Benavides, G. M., 379
Bender, H., 364
Benedetti, E., 90
Bennett, C. W., 479
Benson, R. B., 224
Bequaert, J. C., 253
Beran, F., 366
Bergmann, W., 83
Bergold, G. H. 458
Berland, L., 209
Berlese, A., 138
Bernstein, M. H., 155
Beroza, M., 403
Berrier, H., 81
Berry, P. A., 297
Berti, A. L., 406
Bess, H. A., 459
Betheil, J., 423
Bethune, C. J. S., 435
Betrem, J. G., 224
Bettini, S., 252
Betts, M. M., 461
Bevan, W. J., 412
Bewig, F., 51
Beyer, A. H., 423, 439
Bhandari, K. G., 151, 155
Bhargava, K. S., 477
Bhat, S. V., 82
Bheemeswar, B., 82

Bidlingmayer, W. L., 415
Bieberdorf, G. A., 268, 425
Bier, K., 146, 154, 155, 156
Bierbrodt, E., 188, 192, 193, 196
Bigger, J. H., 382, 383
Billes, D. J., 255
Birch, L. C., 110, 111, 115, 116, 117, 118, 121, 122, 123, 124, 125, 126, 127, 128, 132, 209, 210
Bird, F. T., 457, 458
Bischoff, W., 189
Bissell, T. L., 431, 432
Black, L. M., 474, 477
Blackwelder, R. E., 311
Blanchard, R. A., 268, 271, 272, 274, 381, 429, 431
Blanton, F. S., 414
Blatchley, W. S., 312, 317
Blattny, C., 476
Blauvelt, W. E., 371
Blewett, M., 61
Blinn, R. C., 355, 357, 358, 360, 362, 363, 371
Bloch, R., 279
Block, K., 62
Block, S. S., 409
Boczkowska, M., 273, 281
Bodenstein, D., 3
Bodenstein, O. F., 403
Bodin, J. H., 65
Boer, D. J. den, 368
Boerke, C. L., 39, 50
Boettiger, E. J., 5, 11
Bogue, M. D., 407
Bohart, G. E., 413
Bohart, R. M., 222
Boisseson, P. de, 252
Boistel, J., 7
Boles, H. P., 268
Bone, G. J., 78
Bonetti, E. M., 388
Bonhag, P. F., 137-60; 140, 142, 143, 148, 149, 154, 155, 156, 157, 258
Bonnemaison, L., 378, 387
Booth, C. O., 278, 478
Borne, L. A., 269
Borror, D. J., 89, 90
Borstel, R. C. von, 155
Bosch, R. van den, 296
Bosticco, A., 78
Bottger, G. T., 365
Bounhiol, A. M., 78
Bounhiol, J. J., 76, 83
Boursin, C., 221
Boush, G. M., 394, 395
Boveri, T., 161, 165
Böving, A. G. E., 311
Bower, L. J., 432, 434
Bowery, T. G., 356
Box, H. E., 221, 293, 294, 304, 314, 328
Boyce, H. R., 292
Boyce, J. S., 464
Boyd, F. T., 272
Brachet, J., 154
Bradford, B., 314, 317, 320
Bradley, J. C., 225
Bradley, J. D., 221
Bradley, R. H. E., 471, 472
Bradley, W. G., 302
Brammanis, L., 317, 323
Brannon, L. W., 385
Braun, E., 169
Brauns, F., 143, 146, 157
Brazzel, J. R., 268, 279
Breev, K. A., 412
Bregger, T., 269, 272
Brehm, V., 210
Brehme, K. S., 167
Brescia, F., 413
Brett, C. H., 385
Bricteus-Gregoire, S., 60
Bridges, C. B., 167
Brien, R. M., 385
Brierley, P., 469
Briggs, F. N., 431
Brinck, P., 216, 224
Brindley, T. A., 382, 383
Brink, R. A., 431
Britton, E. B., 223
Britton, W. E., 320, 323
Broadbent, L., 377, 469, 471, 476, 478, 479, 480
Brokke, M. E., 355
Bronson, T. E., 386, 431
Brookes, R. F., 358
Brooks, J. W., 431
Brooks, M. A., 37-56; 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54
Broughton, W. B., 88, 89, 90
Broun, T., 218, 221
Brown, A. W. A., 59, 402, 403, 413, 414, 416, 453
Brown, E. G., 173
Brown, E. S., 220
Brown, F. M., 59
Brown, L., 302, 304
Brown, N. R., 455, 457, 459, 460, 461
Brown, W. L., Jr., 224
Brubaker, R. W., 377, 378, 385
Bruce, R. B., 359, 364
Bruce, W. N., 408, 411
Brues, A. M., 150
Brues, C. T., 57, 202, 267, 311
Brundin, L., 223
Bruns, H., 456, 461
Brunson, M. H., 305
Bryan, D. E., 268, 425, 428
Bryan, J. H. D., 143
Buchholz, A. B., 427
Buchner, P., 37, 38, 39, 40, 41, 42, 43, 45, 48, 49, 50, 51, 52, 151
Buchner, R., 169
Buck, J. B., 79
Buckner, A. J., 359
Buddenbrock, W. von, 19, 33, 93
Bugher, J., 246
Buhl, C. Z., 388
Buhr, H., 273, 281
Bukasov, S. M., 281
Bullock, T. H., 92
Bunn, R. W., 432, 433, 434
Burditt, A. K., Jr., 279
Burgess, R. W., 243
Burkhardt, C. C., 280, 415
Burnett, G. F., 412, 416
Burrage, R. H., 313, 317, 322, 328, 329, 427
Burrell, R. W., 326
Busnel, M. C., 89, 90, 96, 99, 100
Busnel, R. G., 64, 87, 88, 89, 90, 92, 96, 97, 99, 100
Busquets, M. A., see Angulo-Busquets, M.
Bustamante, F. M. de, 246
Busvine, J. R., 406
Butenandt, A., 27, 32
Butler, C. G., 170
Butler, G. D., Jr., 424
Butovitsch, V., 450, 451, 454, 455, 456
Butt, F. H., 148, 162, 199
Butzler, G. J., 363
Buxton, P. A., 218, 252
Bynum, E. K., 269, 272, 293

C

Cadman, C. H., 474
Caesar, L., 435
Cairaschi, E. A., 317
Caldwell, J. S., 423
Caldwell, R. M., 269, 272, 275
Cale, G. H., Jr., 161, 175
Calhoun, S. L., 391
Callahan, P. S., 279
Callenbach, J. A., 272, 283
Callot, J., 250
Calvert, F. W. M., 174
Cameron A. E., 253, 435
Camin, J. H., 22, 33
Campbell, R. E., 430
Campbell, W. V., 392
Caradja, A., 217
Carayon, J., 37
Carbonell, C. S., 2, 7, 8
Carlisle, E., 169, 358, 366
Carlson, E. C., 378
Carman, G. E., 363
Carne, P. B., 110
Caro, L. de, 77
Carpenter, C. P., 356
Carpenter, F. M., 202, 262, 311
Carpenter, G. D. H., 221
Carroll, W. J., 463
Carter, R. H., 318
Carter, W., 279
Cartier, J. J., 269, 276
Cartwright, W. B., 268, 284,

429
Cary, M. M., 221
Case, J. F., 3, 4, 5, 11
Casey, D. J., 411
Cass, L. M., 58, 60
Cassil, C. C., 364, 365
Castillo, J. del, 9
Cecil, R., 435, 436
Celestin, W., 100
Chada, H. L., 268, 276
Chadwick, L. E., 12, 19, 20, 28, 33
Chaffin, W., 272
Chamberlain, E. E., 385
Chamberlin, F. S., 394
Chamberlin, J. C., 60, 61
Chamberlin, T. R., 313, 317, 432, 433, 434, 436, 437, 438
Chandler, W. A., 360
Chang, C. S., 14
Chang, T. C., 75
Chapman, A. J., 391
Chapman, H. C., 413
Chapman, P. J., 372
Chapman, R. A., 325, 326
Chapman, R. K., 387
Chapman, R. N., 126
Chapman, T. A., 202
Charmoy, D. D. de, see D'Emmerez de Charmoy, D.
Chatters, R. M., 267, 278, 279, 424
Chaudhary, S. A., 384, 387
Chauvin, R., 273, 281
Chavasse, P., 88, 89, 90
Chefurka, W., 12, 267
Chen, P. S., 235, 236
Chesnokov, P. G., 269
Chiang, H. C., 279
Chin, C. T., 281
Chiswell, J. R., 183
Chopard, L., 100, 214
Christenson, L. D., 303
Chrysanthus, F., 93
Claassen, P. W., 426
Clancy, D. W., 360, 368
Clapp, J. M., 404
Clark, A. F., 291, 296
Clark, A. J., 62
Clark, R C., 457, 459, 460, 461
Clarke, N. G., 358
Clausen, C P., 291-310; 291, 296, 297, 304, 305, 306, 326, 327, 456, 457
Clements, A. N., 233, 234, 252, 253
Cleu, H., 214
Cleveland, E. A., 268, 276
Cleveland, L. R., 43, 49, 51
Cloudsley-Thompson, J. L., 22
Cochran, L. C., 469, 471
Cohen, N. W., 407
Cole, C. E , 367
Cole L. C., 130
Colless, D. H., 405
Collins, D. L., 414
Colombo, G., 138, 146, 154, 155, 156
Colwell, W. E., 423
Comenge, M. G., 68, 77, 79, 80, 81, 82
Compere, H., 297
Complin, J. O., 358, 362, 367, 371
Compton, L. E., 269, 272, 275
Comstock, J. H., 312
Comstock, W. P., 221
Connal, S. L. M. S., see Summers-Connal, S. L. M.
Connell, W. A., 272
Connolla, D P., 356, 452
Cook, E F., 185, 186, 187, 188, 189, 194
Cook, P. M., 3
Cook, W. C., 432
Coon, B F., 268
Coons, G. H., 470
Cooper, K. W., 203
Cooper, R. H., 321
Coraboeuf, E., 7
Corliss, J. M., 451, 454
Corteggiani, E., 11
Cortés, I. A., 273, 385
Cory, E. N., 429, 430
Cottier, W., 385
Cowan, C. B., Jr., 391, 392, 393
Cowie, J. D., 317
Cox, B. L., 29
Cox, H. C., 279, 382
Craig, R., 57
Craig, W. E., 361, 362
Craighead, F. C., 311, 450
Cram, P., 435
Crampton, G. C., 188, 194, 203, 204, 261
Cranham, J. E., 357, 358, 365, 369, 371
Creighton, J. T., 59, 68, 394
Crescitelli, F., 1
Critchfield, F. H., 356
Crow, J. F., 167
Crowell, H. H., 59, 60, 388, 409
Crowell, R. L., 403
Crowson, R. A., 311
Cruickshank, I. A. M., 385
Crumb, S. E., 437
Cuff, R. L., 402, 416
Cumber, R. A., 317
Cummings, W. A. W., 358, 365
Cumpston, D. M., 324
Currie, G. A., 262
Cutkomp, L. K., 279, 414
Cutright, C. R., 297

D

Dadd, R. H., 63, 67
Dadin, J. M., 292
Dahm, P. A. 407, 415
Dahms, R. G., 268, 269, 275, 283, 284, 380
Dale, W. T., 476
Dalton, A. J., 154
Daniel, F. Z., 213
Daniels, N. E., 268, 276
Dansan, A., 88
Darley, M. M., 423
Darlington, P. J., Jr., 209, 210, 211, 213, 215, 218, 223
Das, G. M., 187, 189, 190, 191, 192, 193, 194, 195, 196
Das, N. K., 155
Dasgupta, B., 155
Davich, T. B., 318
David, J. T., see Timon-David, J.
David, W. A. L., 377-400; 384, 387
Davidson, G., 251, 404
Davidson, J., 110, 111, 112, 118, 129
Davidson, R. H., 436, 437
Davies, D. M., 253
Davies, L., 253
Davies, R. G., 365, 366
Davies, W. H., 369
Davis, A. C., 385
Davis, D. L., 408
Davis, E. W., 430
Davis, G. C., 438
Davis, J. J., 322, 324, 326, 327, 328, 329, 429
Davis, J. M., 453
Davis, J. W., 391, 392, 393
Davis, N., 142
Davis, N. T., 49
Davis, R. L., 268, 269, 424, 436, 437
Day, M. F., 58, 59, 60, 471, 473
Deal, A. S., 383
Dean, F. P., 367, 372
Dean, G. A., 429, 430
Dean, H. A., 377, 378, 387, 391, 392, 393
Dean, R. W., 367, 372
Deay, H. O., 279
DeBach, P., 305, 306
Debaisieux, P., 95
de Beer, G. R., see Beer, G. R. de
de Boisseson, P., see Boisseson, P. de
de Bustamante, F. M., see Bustamante, F. M. de
de Caro, L., see Caro, L. de
de Charmoy, D. D., see D'Emmerez de Charmoy, D.
Decker, G. C., 68, 377, 379, 380, 381, 382, 423
Deegener, P., 138, 140
de Fluiter, H. J., see Fluiter, H. J. de
De Foliart, G. R., 410, 411, 412

Degrois, M., 90
de Gryse, J. J., see Gryse, J. J. de
de Haller, G., see Haller, G. de
Delamare Deboutteville, C. 216
del Castillo, J., see Castillo, J. del
de Lesse, H., see Lesse, H. de
del Guercio, G., see Guercio, G. del
Delkeskamp, K., 217, 224
Delong, D. M., 421, 423
de Meijere. J. C. H., see Meijere, J. C. H. de
De Meillon, B., 222
Demianovski, S. J., 77
D'Emmerez de Charmoy, D., 326
Demoulin, G., 212
den Boer, D. J., see Boer, D. J. den
Denis, J., 215
Denisova, Z. M., 251
Depdolla, P., 138, 149
de Peyerimhoff, P., see Peyerimhoff, P. de
Derbeneva-Ukhova, V. P., 260
der Meer, F. A. van, see Meer, F. A. van der
Desportes, C., 250, 254, 256, 258
Dethier. V. G., 6, 19, 20, 23, 24, 25, 28, 29, 30, 32, 33, 93, 267, 279
Detinova, T. S., 251, 252
Diakonoff, A., 218, 221
Dick, J., 303
Dickason, E. A., 429, 430
Dicke, F. F., 268, 271, 272, 274, 277, 284
Dickinson, B. C., 411
Dickinson, W. H., 413
Dickson, R. C., 424, 425
Diehl, S. G., 278, 424
Dietrick, E. J., 306
Dillon, L. S., 215
Ditman, L. P., 61, 77, 381, 385, 429, 430, 431
Dobroscky, I. B., 476
Dobrotworsky, N. V., 235, 239, 240
Dobson, R. C., 268, 270
Dodd, A. P., 109
Doering, K., 435
Doflein, F., 21
Dogger, J. R., 378
Dolmatova, A. V., 257
Doman, N. G., 77
Dominick, C. B., 393, 394
Doncaster, J. P., 473
Doolette, J. B., 383
Dosse, G., 384, 388
Douglas, W. A., 268, 272, 274 276
Doutt, R. L., 295, 299, 300
Dove, W. E., 411
Dowden, P. B., 293, 294, 458, 459, 461
Dowdy, A. C., 387, 389
Dowling, M. A. C., 406
Downes, J. A., 249-66; 95, 100, 250, 253, 254, 255, 256
Downes, W., 315
Draafsel, E. J., see Jaeger-Draafsel, E.
Drake, C. J., 68
Dreher, K., 168
Dreiss, J. M., 411
Dresden, D., 2, 7
Driggers, B. F., 437
Drilhon, A., 64
Drooz, A. T., 294
Dudley, J. E., Jr., 423, 431
Duerden, J. C., 393
Dumbleton, L. J., 202, 291, 296, 313, 322, 323, 326, 327
Dumortier, B., 100
Dunn, J. A., 385
Dunn, L. C., 161, 170, 175
Dunn, W. J., 415
DuPorte, E. M., 182, 186
Duran, M. L., 314, 317, 323
Dutky, S. R., 327
Du Toit, R., 416
Dyar, H. G., 250, 252
Dye, D. W., 385
Dzierzon, J., 161

E

Early, J. D., 393
Eastop, V. F., 88
Eaton, C. B., 455
Eaton, J. K., 365, 366
Ebeling, W., 370, 371
Eckert, J. E., 173, 174
Eckhardt, R. C., 268, 272, 274, 276
Eckroth, E. G., 269
Eddy, G. W., 402, 406, 411, 416
Eden, W. S., 268, 272, 378
Edmunds, G. F., Jr., 211, 219
Edwards, E. E., 412
Edwards, F. W., 222, 250, 251, 254, 255, 257, 260, 261
Edwards, J. G., 209
Edwards, R. L., 33
Egner, V. E., 12
Ehnbom, K., 96
Ehrlich, P. R., 221
Eide, P. M., 386
Eisenhart, C., 431
Eisner, T., 23
Elgee, D. E., 457
Ellertson, F. F., 316
Elliott, K. R., 62, 66, 67
Ellis, P. E., 96, 98
Ellis, R. R., 15
Elmer, H. S., 362, 367
Elson, P. F., 455
Elton, C., 116
Emden, F. I. van, 311, 316, 319, 325
Emerson, A. E., 208, 212, 213, 216, 218, 219
Emerson, R. B., 392
Emery, W. T., 58
Endrigkeit, A., 386
Enkerlin, D., 385
Eric, F., 461
Erkiliç, S., 378
Erlich, S., 315
Errington, P. L., 112
Esaki, T., 218
Esau, K., 479
Esselbaugh, C. O., 222
Essig, E. O., 313, 429, 432
Evans, A. C., 59, 60, 393
Evans, D. R., 32
Evans, E. J., 90
Evans, J. W., 182, 220
Evans, T. M., 366, 367, 368, 369
Evans, W. G., 430
Evens, F. M. C., 223
Everly, R. T., 436, 437, 440
Every, R. W., 429, 430
Ewing, K. P., 381, 390, 391, 392
Ezyaguirre, C., 10

F

Faber, A., 90, 96, 97, 99, 100
Fabre, J. H., 313, 318, 322
Fahey, J. E., 382
Fairchild, G. B., 223, 256, 257, 406, 415
Fairchild, H. E., 403, 411
Fairclough, R., 410
Fales, J. H., 403
Farid, M. A., 233, 237
Farquharson, C. O., 251
Farrar, C. L., 170
Fay, R. W., 401-420; 404, 409
Fedorov, A. I., 76
Felix, M. D., 154
Felt, E. P., 435
Fenjves, P., 394
Fennah, R. G., 217, 220
Fenton, F. A., 380, 423
Ferreira, M. O., 246
Ferris, G. F., 182
Fettes, J. J., 450, 451, 453, 454, 455
Fezer, K. D., 439, 440
Fickewirth, E., 381
Fiebrig-Gertz, C., 254
Fiedler, O. G. H., 416
Fife, H. R., 356
Fife, L. C., 381, 390, 391, 392
Filmer, R. S., 379, 429
Fink, R., 40, 44, 46, 49, 50, 52
Finlayson, L. H., 6, 96
Finney, G. L., 292, 302, 303,

305
Fischer, C. D., 355
Fisher, E. H., 423, 438
Fisher, H. G., 284
Fisher, R. C., 452
Fisher, R. W., 13
Fisk, F. W., 367
Fiske, W. F., 107
Fitzgerald, D. V., see Vesey-Fitzgerald, D.
Fitzgerald, L. R., 65
Fjelddalen, J., 386
Flanders, S. E., 292, 297, 299, 300, 302, 304, 305
Fleming, A. A., 284
Fleschner, C. A., 306
Fletcher, D. S., 221
Flint, R. F., 212
Flint, W. P., 422
Flock, R. A., 469, 471
Florkin, M., 45, 60
Florov, D. N., 214
Floyd, E. H., 428, 429
Fluiter, H. J. de, 316, 317, 318, 469
Fluke, C. L., 423, 431
Fogh, T. W., see Weis-Fogh, T.
Folsom, J. W., 429, 430, 431, 438, 439
Forbes, S. A., 326, 423
Forbes, W. T. M., 441
Forsee, W. T., Jr., 272
Forster, H., 470
Forster, W., 215, 221
Fortushnyi, V. A., 415
Fox, H., 314, 318, 322, 324, 327, 329
Fraenkel, G., 37, 45, 48, 50, 52, 57, 58, 59, 60, 61, 62, 63, 67, 68, 69, 97, 260, 267, 280, 283
Fraisse, R., 75, 77, 83
Fraizier, N. W., 469
Franceschini, J., 77
Franclemont, J., 441
Frank, W., 41, 43, 44, 46, 49, 50, 54
Franke, F. R., 356
Franklin, H. J., 313, 316
Franklin, W. W., 431
Franssen, C. J. H., 385
Franz, H., 210
Franz, J., 456, 458, 460, 461
Fraser, F. C., 212, 219
Frappa, C., 296
Freeborn, S., 232, 233
Freeman, P., 222
Freeman, T. N., 221
Freitag, J. H., 475, 479
French, G. T., 422
Friederichs, K., 328, 435
Friend, R. B., 314, 320, 322, 323, 329
Friend, W. G., 57-74; 58, 60, 62, 63, 64, 65, 66
Frings, H., 87-106; 19, 29, 59, 89, 90, 92, 95, 96, 100
Frings, M., 87-106; 19, 87, 89, 90, 92, 96
Frisch, K. von, 28, 161, 169, 170
Frisone, G. J., 362, 371
Fritzsche, R., 369
Frizzi, G., 243, 244
Frohne, W. C., 222, 252, 258
Fukuda, J., 282
Fukuda, T., 60, 77, 79, 83
Fukushi, T., 474
Fukuto, T. R., 12
Fuller, F. M., 392
Fuller, H., 204
Fuller, H. S., 225
Fuller, M. E., 109, 110, 260
Fulton, B. B., 100
Fulton, R. A., 60, 61, 372, 410
Furman, D. P., 368
Furniss, R. L., 455
Furshpan, E., 11

G

Gabaldon, A., 406
Gäbler, H., 450
Gad, A. M., 255, 256
Gahan, J. B., 404, 408
Gaines, J. C., 377, 378, 387, 389, 390, 391, 392, 393
Gaines, R. C., 390, 392
Galindo, P., 232, 235, 237
Galley, W., 402, 416
Gallun, R. L., 283
Gamo, T., 78, 79, 83
Gannon, N., 380, 382
Ganong, R. Y., 472
Gans, J., 28, 32
Gardiner, B. O. C., 384, 387
Gardner, J. C. M., 311, 315
Gardner, T. R., 326
Garman, H., 422
Garman, P., 372
Garmus, R. D., 362, 363, 371, 372
Gasser, R., 358, 359, 368
Gatzi, K., 365
Gauhe, A., 281
Gaul, A. T., 98
Gauthier, G., 313
Geigy, R., 45, 48, 50, 51, 148
Georletter, R., 281
Gerould, J. H., 427, 428
Gerry, B. I., 414
Gersdorff, W. A., 403
Gertler, S. I., 365
Gertz, C. F., see Fiebrig-Gertz, C.
Gesell, S. G., 317
Ghabn (Abd El-Aziz Ali El-Sayed), 392
Ghani, M. A., 273
Ghelelovitch, S., 235, 239
Ghosh, A. R., 404
Giannotti, O., 390, 391, 393
Giardina, A., 147
Giavarini, I., 169
Gibson, N. H. E., 100
Giese, A. C., 46
Giglioli, G., 405
Gilford, B. N., 241, 242
Gillette, J. D., 242
Ginsburg, J. M., 379
Giordani, Soika, A., 225
Gislen, T., 209
Given, B. B., 317, 326
Gjullin, C. M., 414
Gladenko, J. N., 415
Gladstone, G. P., 60
Glasgow, R. D., 414
Glen, R., 450
Glick, P. A., 209
Gluke, C. L., 313, 317
Godan, D., 388
Goddard, W. H., 314, 318
Goetghebuer, M., 255
Goetze, G., 169
Goldsmith, J. B., 414
Goljan, A., 312
Gomes, F. P., 167, 168
Gontarski, H., 169
Gonzáles, J. E., 393
Gooden, E. L., 327
Goodnight, C. J., 225
Goodnight, M. L., 225
Goodwin, T. W., 63
Goodwin, W. J., 407, 411
Goossen, H., 2
Gordon, C. F., 262
Gordon, H. T., 58
Gordon, R. M., 257
Gorzycki, L. J., 390
Goss, R., 143
Gösswald, K., 462
Gould, D. J., 366, 367, 368, 369
Gowen, J. W., 161, 167, 168, 175, 176
Gräbner, K. E., 49, 50
Grabowski, C. T., 23
Graham, C., 429, 430
Graham, S. A., 450, 456, 462, 463
Grahn, M., 1, 11
Grandori, R., 278, 381
Granett, P., 356, 411
Granfield, C. O., 431
Granovsky, A. A., 269, 422, 423
Grassé, P. P., 37
Grassl, C. O., 269, 272
Gray, K. W., 431
Grayson, J. M., 317, 323
Green, A. A., 404
Green, M. B., 369
Green, M. M., 167, 168
Green, N., 403
Green, V. E., Jr., 272
Greenbank, D. O., 464
Greenslade, R. H., 386, 387, 395
Greenwood, D., 357, 358

Greenwood, D. E., 379
Gregoire, S. B., see Bricteus-Gregoire, S.
Grell, K. G., 204
Gresham, W. B., 394
Gressette, F. R., Jr., 407
Gressitt, J. L., 207-30; 208, 209, 217, 218, 224, 314, 315, 320, 321, 323, 328
Gresson, R. A. R., 150, 151, 152
Greve, H., 100, 251
Grey, L. P., 221
Gries, G. A., 369
Griffin, J. A., 378
Griffiths, J. T., Jr., 415
Grison, P. A., 281
Gross, J., 139, 140, 143
Grout, R. A., 169, 171
Groves, A. B., 360
Groves, J. R., 368
Gryse, J. J. de, 449, 450
Guelbenzu, D., 79, 82
Guelmino, D. J., 252
Guercio, G. del, 439
Guevara, C. J., 273, 385
Gunn, D. L., 97
Gunther, F. A., 355, 357, 358, 360, 362, 363, 371
Gurney, A. B., 209, 213, 219, 220
Guthrie, F. E., 394
Guthrie, R. E., 394, 395
Guyagliumi, P., 314, 323, 326, 327
Gyrisco, G. G., 421-48; 313, 317, 322, 328, 329, 377, 378, 382, 383, 423, 424, 426, 427, 430, 431, 435, 436, 437, 438, 439, 440
Gyrisco, V. H., 441

H

Hachinohe, Y., 162, 167, 168, 169
Hackerott, H. L., 268, 270, 276, 425
Hackett, H. C., 384, 385
Hadaway, A. B., 402, 404, 405, 416
Haddon, W., 46
Hadley, C. H., 317
Haeger, J. S., 251
Haeussler, G. J., 292
Hafez, M., 300
Häfliger, F., 358, 359
Hagan, H., 140, 147, 149
Hagan, H. R., 432, 434
Hageman, R. H., 281
Hagen, H. A., 250, 253
Hagen, K. S., 60, 63, 303
Hagiwara, S., 4, 9, 89, 91
Halff, L. A., 45, 48, 50, 51
Hall, D. G., 335-54
Hall, D. W., 162
Hallenbeck, C., 92
Haller, G. de, 41, 44, 49, 50, 52, 54
Ham, W. E., 423
Hamamura, Y., 65, 76
Hamilton, E. L., 212
Hamlin, J. C., 432, 433, 434
Hamlyn, M. G. B., 479
Handford, R. H., 267
Handlirsch, A., 326
Hanna, R. L., 392
Hansens, E. J., 407, 410, 411
Hansson, A., 89, 95, 98
Haramoto, F. H., 296
Harding, W. C., 408
Hardy, G. H., 211, 222
Harpaz, I., 425, 470
Harrington, C. D., 431
Harris, H. J., 359
Harris, L., 412
Harris, R. W., 279
Harris, W. D., 355
Harrison, A., 12, 13
Harrison, B. D., 474
Harrison, F. P., 381, 385
Harrison, G. H., 220
Harry, J. B., 360
Hartley, G. S., 386, 387, 395
Hartline, H. K., 31
Hartzell, A., 423, 476
Harvey, T. L., 268, 270, 276, 425
Hasegawa, M., 169
Haskell, P. T., 6, 89, 90, 92, 94, 96, 99, 100
Hassett, C. C., 28, 32
Hastings, E., 62, 434
Hathaway, W. B., 371
Hatton, R. G., 469, 471
Haug, G. W., 303
Haupt, H., 435
Hawkins, J. H., 381
Hawley, I. M., 314
Haws, B. A., 269
Haydak, M. H., 62
Hayes, H. K., 269
Hayes, W. P., 314, 321, 323, 324
Hayne, D. W., 313
Haynes, H. L., 356, 411
Haynes, J. L., 440
Hayslip, N. C., 269, 272, 381
Hazelton, L. W., 364
Heathcote, G. D., 469, 471, 476
Heberdey, R. F., 209
Hecht, O., 252
Hecker, E., 7, 27, 32
Hegner, R. W., 147, 149, 152
Hein, G., 169
Heinze, K., 480
Hellmuth, H., 50
Hendel, F., 261
Henderson, C. A., 268, 276
Hennig, W., 202, 208, 210, 218, 222, 256, 261
Henry, L. M., 182
Henry, W. A., 438
Hensley, S. D., 278
Henze, O., 461
Hepburn, G. A., 303
Hering, E. M., 223
Hermelin, P. R., 296
Herrick, G. W., 426
Hertig, M., 257, 406, 415
Hervey, G. E. R., 387
Hesse, A. J., 316, 325
Hesse, R., 210
Hester, W. F., 361
Hetschko, A., 257
Hewitt, W. B., 479
Hey, G. L., 371
Heymons, R., 147
Heyne, E. G., 269, 284
Hibbs, E. T., 379
Hibbs, J. W., 438
Higgons, D. J., 357, 358, 369, 371
Hilborn, F. T., 360
Hilborn, M. T., 361
Hilditch, T. P., 61
Hill, A., 253
Hill, C. C., 268
Hill, M. A., 255
Hill, R. E., 412
Hillenbrand, E. F., Jr., 361
Hinds, W. E., 336, 338, 347
Hinman, F. G., 383
Hinton, H. E., 181-206; 57, 60, 64, 66, 67, 78, 88, 97, 182, 183, 196, 197, 199, 200, 202, 203, 204
Hirano, C., 58, 59, 60, 63, 68
Hixson, E., 407, 412
Hocking, B., 250, 251, 252, 253, 258, 267
Hocking, K. S., 402, 416
Hodge, C. R., 393
Hodges, K. C., 413
Hodgson, E. S., 19-36; 6, 7, 19, 22, 24, 25, 27, 29, 30, 31, 32, 33
Hodson, A. C., 148, 279
Hoffman, C. H., 315, 320, 323 324,
Hoffman, R. A., 403, 407, 411, 412
Hoffmeyer, S., 221
Hofmaster, R. N., 379, 389
Hogben, L. T., 150
Hogeboom, G., 137
Hogsett, J. N., 361
Holdaway, F. B., 283
Holdaway, F. G., 268, 271
Holdhaus, K., 213
Holland, G. P., 223
Hollande, A., 37
Hollander, W. F., 161
Holloway, J. K., 327
Holloway, J. R., 303
Hollowell, E. A., 422
Holmes, N. D., 278
Holst, E. C., 176
Holst, M. J., 464
Holz, W., 388

Hood, J. D., 88
Hoof, H. A. van, 387
Hoogstraal, H., 225
Hopkins, A. R., 393
Hopkins, D. E., 411
Hopkins, L., 427, 431, 437, 439, 440
Hopp, H. H., 370, 371
Hopping, G. R., 450, 462, 463
Horber, E., 269, 273
Horie, Y., 80, 81
Hörmann, S. von, 100
Horn, H. J., 359
Hornstein, I., 407
Horovitz, S., 284
Horsfall, J. G., 361
Hoskins, W. M., 57, 429
Hough, J., 413
Hough, W. S., 367
House, H. L., 61, 65, 66, 68, 303
Houser, J., 341
Houston, B. R., 479
Hovanitz, W., 427, 428
Howard, L. O., 107, 250, 252, 435
Howden, H. F., 311, 312, 313, 315, 316, 318, 320, 321, 325
Howell, D. E., 386, 402, 416
Howie, E. L., 449
Howitt, A. J., 269, 272, 283
Howland, A. F., 385, 387
Hoy, J. M., 317
Hoyle, G., 7, 8, 9, 10, 13, 14, 15
Hoyt, C. P., 258
Hsu, W. S., 146, 151, 153, 157
Hubault, E., 257
Hubbell, T. H., 313
Huber, F., 100
Huber, W., 100
Huckett, H. C., 431
Huddleston, E. W., 423
Hudson, D. W., 449
Hudson, G. V., 218, 221
Hudson, H. F., 438
Hueck, H. J., 368
Huff, C. G., 235, 250
Huffaker, C. B., 300, 301
Huger, A., 41, 44, 45
Hughes, G. M., 3, 4, 6, 93, 96
Hughes-Schrader, S., 140
Huisman, H. O., 364, 365, 371
Hull, W. B., 366, 367, 368, 369, 423
Hummer, R. W., 365, 366
Hunt, J. L., 384
Hunt, W. T., 302
Hunter, G. W., 3rd, 368, 369
Huntington, E. I., 221
Hurka, K., 317
Husman, C. N., 414
Hutchins, R. E., 392

I

Iablokoff, A. K., 210
Ibbotson, A., 478
Ibrahim, M. A., 284
Iglinsky, W., 381, 390, 391, 392, 393
Ilic, B., 320
Illies, J., 219
Immer, F. R., 269
Imms, A. D., 109, 143, 145, 189, 192, 193, 202, 249, 261
Inagami, K., 32
Ingram, J. W., 268, 276, 293
Irzykiewicz, H., 471
Isely, D., 342
Ishii, S., 58, 59, 60, 62, 63, 64, 65, 67, 68, 273, 278, 279, 280
Isler, D. A., 453, 454
Issel, B., 461
Issel, W., 461
Itaya, K., 75, 82
Ito, T., 65, 81
Ivany, J. S., see Szent-Ivany, J.
Ivy, E. E., 381, 390, 391, 392, 393
Iyengar, M. O. T., 222

J

Jacks, H., 385, 386
Jackson, B. S., 358
Jacobs, W., 87, 92, 93, 97, 99, 100
Jacobson, E., 251
Jacusiel, F., 406, 415
Jaeger-Draafsel, E., 368
Jahn, T. L., 19, 33
Jancke, O., 384
Janssens, E., 210, 223
Jaynes, H. A., 293
Jeannel, R., 212, 213, 224
Jefferson, R. N., 362, 367, 372
Jenkins C. F. H., 291
Jensen, J. A., 415
Jeppson, L. R., 358, 362, 367, 371
Jepson, O. B. E., 313, 317, 322, 328
Jewett, H. H., 423, 424
Johannsen, O. A., 148, 162, 199
Johnson, A. N., 414
Johnson, E. W., 453, 454
Johnson, H. W., 422, 423
Johnson, J. P., 320, 323
Johnson, J. R., 315
Johnson, P. C., 313
Johnson, W. T., 408
Johnston, C. O., 272
Johnston, T. H , 268, 269, 283, 284
Johnston, T. W., 272
Jolivet, P., 224
Jones, E. T., 269, 278, 284
Jones, F. G. W., 33
Jones, F. R., 422
Jones, H. A., 403
Jones, L. G., 431
Jones, L. J., 432, 433, 434
Jones, L. S , 469, 471
Jordan, K. H. C., 213
Jucci, C., 37, 81
Junker, H., 139

K

Kahn, M. C., 100
Kalandra, A., 454, 455
Kalf, G. F., 58
Kalinbach, E. R., 434
Kamal, M., 291
Kassanis, B., 473, 477
Kaszab, Z., 218
Kato, M., 65, 78
Katsuki, Y., 95
Kaufmann, B. P., 155
Kawada, A., 273
Kearns, C. W., 12, 14, 360
Keck, C. B., 173
Keegan, H. L., 366, 367, 368, 369
Keen, F. P., 450, 452, 463
Keiding, J., 408
Keilin, D., 161, 199
Kelleher, J. S., 383
Keller, H., 48, 50
Keller, J. C., 408, 413
Kellogg, V. L., 257
Kelsheimer, E. G., 381
Kenaga, E. E., 365, 366
Kennedy, J. S., 68, 69, 267, 278, 405, 478, 480
Kennedy, N. K., 13
Kennett, C. E., 301
Kern, F., 314
Kerr, L. S., 175
Kerr, W. E., 162, 167, 168, 175
Kerswill, C. J., 455
Kerur, D., 58, 62
Ketchel, M. M., 48, 50
Kevan, D. K. M., 88
Khalaf, K., 223
Kiefer, A. S., 453
Kieffer, J. J., 256
Kiff, B. W., 360
Kiigemagi, V., 355
Kikkawa, H., 63, 64, 65, 78, 80
Kilbey, D. W., 357
Kilpatrick, J. W., 401-20; 407, 408, 409
King, D. R., 369, 435, 436, 437, 438
King, E. W., 210, 215, 220
King, J. L., 326, 327
King, R., 137
King, R. C., 146, 156
King, R. L., 149
Kinghorn, J. M., 450, 462, 463
Kinsey, A. C., 208, 224
Kirby, A. H. M., 355, 371

Kiriakoff, S. G., 210
Kirimura, J., 78
Kirk, R., 257
Kishi, Y., 78
Kitzmiller, J. B., 231-48; 231, 235, 237, 238, 239, 242, 243
Kleinfeld, R., 154
Klock, J. W., 409
Klostermeyer, E. C., 368
Klots, A. B., 215, 221
Kluge, E. B., 416
Knab, F., 250, 252, 258
Knaus, W., 319
Knight, K. L., 222, 235, 237
Knight, R. C., 469, 471
Knight, R. L., 273, 284
Knipe, F. W., 404
Knipling, E. F., 270, 403, 406, 409
Knuth, P., 258, 259, 260
Koch, A., 37, 39, 43. 45, 49, 52, 54
Kocher, V., 45, 48, 50, 51
Koehler, C. S., 423, 436, 437, 441
Kogure, M., 81
Köhler, A., 151,157
Kohler, H. von, 369
Kolbezen, M. J., 355, 358, 363
Kolderie, M. Q., 54
Kolubajiv, S., 454, 455
Konig, E., 454
Kornhauser, S., 143, 144, 145
Korschefsky, Von R., 315, 318, 321, 323, 324, 325
Kotila, J. E., 470
Kotter, L., 49, 50
Kovacevic, Z., 458
Kowal, R. J., 452
Kraan, H., 406
Kraemer, G. D., 452
Kramer, A., 430, 431
Krause, J. B., 148
Kreitlow, K. W., 439
Krieg, A., 327, 458
Kruseman, G., 214
Krzanowski, A., 461
Kuenen, D. J., 368
Kuffler, S. W., 10
Kuhn, R., 280, 281
Kulash, W. M., 378, 381
Kulzer, H., 224
Kundzins, W., 364
Kunkel, L. O., 474, 476, 480
Kupka, E., 33
Kuwana, H., 78
Kuwana, I., 298
Kuzina, O. S., 260
Kvicala, B., 473

L

Laake, E. W., 410
Labrecque, G. C., 413
Lack, D., 112
LaForge, F. B., 403
Lahargue, J., 76
Laidlaw, F. F., 219
Laidlaw, H. H., Jr., 161, 162, 167, 168
Laird, E. F., Jr., 424, 425
Laird, M., 222
Lamb, K. P., 273, 386
LaMer, V. K., 413
Lanchester, H. P., 378
Landaluze, P. U., see Urquijo Landaluze, P.
Landin, B., 313
Lane, F., 312, 315
Lane, J., 218, 222
Langdon, R. G., 62
Lange, H. W., 295
Lange, W. H., 378
Lange, W. H., Jr., 221
Langenbuch, R., 281
Langford, G. S., 408
Lanham, U. N., 37, 48
Lapidus, J. B., 281
Lardy, H. A., 423
Larsen, E. B., 251
Lasker, R., 46
Lass, M., 139, 140
Lathrop, F. H., 360, 361
Laudanski, F., 75, 77
Laude, H. H., 272
Lauderdale, R. W., 409
Lauger, P., 366
Laughlin, R., 314
Lautenschlager, F., 148
Laven, H., 235, 236, 238, 239
Lawson, F. R., 394
Leach, L. D., 378
Lebedeva, N. A., 281
Leclercq, J., 218, 225
Leclercq, M., 258
Lecomte, J., 7, 99
Lederberg, J., 44, 48, 52, 53
Lee, D. J., 217, 222
Lee, P., 243
Lee, W. R., Jr., 167
Leeson, H. S., 252
Legay, J. M., 75-86; 75, 76, 79, 82, 83, 84
Legg, J. T., 473
Leibovici, C., 384
Leiderman, L., 379
Leighly, J., 432
Lejeune, R. R., 450, 462, 463
Lekander, B., 452
LeMagnen, J., 33, 34
Lembright, H. W., 369
Leng, C. W., 311, 312
Lengerken, H. von, 318
Lepage, H. S., 390, 391, 393
Le Pelley, R. H., 297, 314, 318, 477
Lesins, K., 176
Lesse, H. de, 215, 221
Leston, D., 88, 89
Lettvin, J. Y., 6, 19, 24, 30
Leuchtenberger, C., 146, 155
Lever, R. J. A. W., 293, 313, 314
Levinson, Z. H., 57, 60, 66, 67
Lewallen, L. L., 407
Lewis, C. T., 23
Lewis, D. J., 253, 257
Lewis, F. H., 360
Lewis, L. F., 176
Lewis, S. E., 11, 12, 14
Lhoste, J., 384
Licent, E., 435
Lickerish, L. A., 387
Lieberman, F. V., 432, 433 434
Lieftinck, M. A., 219
Lienk, S. E., 372
Lieux, D. B., 413
Lillie, R. D., 154
Lilly, J. H., 58, 61, 62, 63, 66, 67, 281, 378
Lincoln, C., 268, 423, 426, 427
Lindauer, M., 169
Lindberg, H., 214
Lindquist, A. W., 318, 321, 403, 404, 406, 408, 411, 412
Lindroth, C. H., 209, 210, 213, 214
Lindsay, D. R., 415
Linke, W., 387
Linsley, E. G., 224, 326
Lintner, J. A., 434, 438
Lipke, H., 45, 57, 59, 60, 66, 67, 68, 267, 280, 283
List, G. M., 432
Littau, V. C., 476
Little, F., 95
Livermore, J. R., 269
Lloyd, D. C , 326, 327
Loden, H. D., 390, 392
Loding, H. P., 316
Loeffel, F. A., 284
Loher, W., 87, 89, 90, 97, 99, 100
Loomis, R. S., 281
Lord, F. T., 368
Lorenzo, A., 82
Losco, G., 359
Lottermoser, W., 89, 90
Lovell, J. B., 12
Lovely, W. G., 382
Löw, I., 280, 281
Lowe, H., 255
Lowenstein, O., 6, 96
Luce, E. N., 363
Luckmann, W. H., 279
Ludvik G. F., 406, 414
Ludwig, C. E., 189
Lugger, O., 316
Luginbill, P., 322, 324, 329
Lukefahr, M. J., 390
Lund, C. W., see Wesenberg-Lund, C.
Lund, H. O., 390, 392
Lunder, R., 168
Lupo, V., 314, 322
Lush, J. L., 167

Luther, W. Z., 21
Lwoff, M., 78

M

Maa, T. (T.C.), 225
McAlister, H. J., 360
Machida, J., 152, 153
Machne, Z
Machida, J., 152, 153
Machne, X., 9
MacCreary, D., 432, 434
McDonald, M. R., 155
McDuffie, W. C., 408, 414, 432, 433, 434
McEwen, F. L., 387
McFarlane, J. E., 95, 96
McGarr, R. L., 391
McGill, C., 138
McGregor, W. S., 406, 411
McGugan, B. M., 305
McIndoo, N. E., 22
McIntyre, T. M., 452
McKelvey, J. J., 273, 385
Mackensen, O., 161, 162, 165, 166, 167, 168, 171, 174, 175
Mackenzie, J. M. D., 461
Mackerras, I. M., 207, 219, 221, 223, 258, 260, 261
McKinlay, K. S., 371
MacLeod, G. F., 252, 429
McLeod, J. H., 298
McLintock, J., 252
McNamee, R. W., 356
McNeal, F. H., 269, 284
MacPhee, A. W., 456
McWhorter, F. P., 437
Madden, A. H., 403, 406, 409
Madle, H., 312, 321
Maeda, S., 303
Maheux, G., 313
Maier, P. P., 407
Makarevskaya, E. A., 77
Makino, K., 32
Malaise, R., 212, 215, 217, 218, 224
Malek, A. A. A., see Abdel Malek, A. A.
Malloch, J. R., 219, 258
Malouf, N., 142
Maltais, J. B., 70, 271, 276, 280, 430
Malyshev, S. I., 212, 225
Mamet, R., 326
Mangan, G. F., 410
Mannheims, B. J., 257
Manning, F. J., 162
Manton, S. M., 182
Maramorosch, K., 469, 475, 476
March, R. B., 335-76; 12, 407
March, R. G. del V., see Valley y March, R. G. del
Marchioni, A. H., 284
Mariani, M., 257
Markham, R., 469, 471, 475
Marks, A., 369
Marks, E., 240, 241
Marlatt, C. L., 337, 339
Marsh, G. A., 224
Marsh, J. W., 453
Marshall, D. S., 377, 378, 382, 383, 427, 435, 436, 437, 438, 440
Marshall, G. A. K., 217, 224
Marshall, J. F., 239, 249, 250
Martelli, M., 318, 323
Martignoni, M. E., 452
Martin, C. H., 305
Martin, D. F., 268, 279, 391
Martin, H., 355, 366, 385, 388, 389
Martin, J. H., 269
Martineau, R., 453
Martorell, L. F., 293
Martyn, E. J., 315
Maryon, M., 243
Masera, E., 82
Mason, W. R. M., 215
Massee, A. M., 271, 469, 471
Massey, C. L., 452
Mathes, R., 269, 272
Mathis, W., 407, 415
Matsui, M., 403
Matsumura, S., 80
Matthew, W. D., 210
Matthey, R., 138
Matthysse, J. G., 403, 410, 411
Mattingly, P. F., 222, 242, 245
Mattson, A. M., 359
Matuda, M., 79
Maughan, F. B., 352, 363, 408
Maxon, M. G., 12
May, A. W. S., 271
Mayer, K., 254, 255, 261
Maymone, B., 80
Maynard, L. A., 66
Mayr, E., 33, 34, 210, 216, 217
Medler, J. T., 68, 382, 422, 423, 435, 436, 437, 438
Meer, F. A. van der, 469
Megahed, M. M., 255, 256
Mehta, D. R., 151, 152
Meijere, J. C. H. de, 189, 250
Melander, A. L., 202, 311
Melhus, I. E., 283
Mellors, R., 138
Meltzer, J., 364, 365, 371, 379
Menon, K. P. V., 315, 317, 318
Mer, G. G., 251
Merkl, M. E., 392
Merriam, R. W., 163
Merrill, L. G., Jr., 378, 429
Merritt, D., 413
Metcalf, R. L., 12, 64, 68, 355, 358, 360, 362, 363, 366, 404, 407
Metcalf, Z. P., 220
Metzger, F. W., 314
Meyer, B. S., 68
Meyer, G. F., 3
Michailoff, A. S., 168
Michelbacher, A. E., 368, 429, 430, 432, 433
Michener, C. D., 221, 225, 326
Middelem, C. H. van, 394, 395
Middlekauf, W. W., 368
Miles, P. B., 432, 434
Miller, B. S., 278
Miller, C. A., 459, 460, 464
Miller, D., 291, 296, 328
Miller, F. E., Jr., 294
Miller, G. L., 32
Miller, J. J., 39, 44
Miller, L. W., 369
Milliron, H. E., 432, 434
Mills, H. B., 438
Milne, A., 130, 131, 132, 133, 134, 317, 322, 323
Milner, M., 100
Minnich, D. E., 19
Mirsky, A. E., 79
Mistric, W. J., 391
Mitchell, B. L., 317, 323
Mitchell, W. C., 296
Mitlin, N., 137, 403
Mittelstaedt, H., 3
Mittler, T. E., 68
Mockford, E. L., 209, 220
Moczar, L., 225
Moericke, V., 279
Mohan, P., 150
Möllring, F. K., 233
Monro, J., 100
Monroe, R. J., 378
Monteith, J., 422, 424
Moon, A. P., 368, 369
Moore, D. H., 411
Moore, J. B., 254
Moorefield, H. H., 360
Morgenthaler, H. U., 154, 155
Morii, K., 77
Morishita, F. S., 362, 367, 372
Morohoshi, S., 82
Morris, G. C., 3rd, 409
Morris, M. G., 416
Morris, R. F., 449, 450, 451, 454, 460, 461, 462, 463, 464
Morrison, F. B., 61
Morrison, H. E., 409
Morrison, P. E., 402, 416
Mote, D. C., 403, 409, 411
Mott, D. G., 464
Moutia, L. A., 296, 321, 326, 328
Moxon, A. L., 411
Muggeridge, J., 293
Muka, A. A., 427, 434, 437,

439, 440
Mukerji, R. N., 151, 154
Muldrew, J. A., 294, 459
Mulla, M. S., 366
Müller, H. J., 43, 45, 50, 269, 273
Müller, P., 365, 366
Mulnard, J., 150, 154
Mulrennan, J. A., 413
Muma, M. H., 407, 412
Mundinger, F. G., 437
Munroe, E., 221
Munroe, E. G., 212, 215
Muntzing, A., 170
Murayama, J., 321
Murray, F. V., 149
Murthy, M. R. V., 60, 63, 64, 67, 68, 82
Musgrave, A. J., 43
Muspratt, J., 100
Myers, J. G., 265
Myers, K., 100
Myser, W. C., 162

N

Nair, J. H., 3rd, 356
Nakajima, M., 81
Nath, V., 150, 151, 152
Neave, S. A., 258
Needham, J., 156
Neiswander, C. R., 268, 277
Nelsen, O. E., 148
Nelson, J. A., 162
Nelson, R. H., 403
Nessenins, G., 452
Neunzig, H. H., 423, 436, 439, 440, 441
Neururer, J., 366
Neuson, H. D., 368
Newbegin, M. I., 210
Newcomer, E. J., 367, 372
Newell, I. M., 296
Newsom, L. D., 392, 423, 427, 437, 438, 439, 440
Newton, R. C., 432, 433, 434
Nichol, A. A., 315, 322, 324, 327
Nicholas, W. C., 255
Nicholson, A. J., 107-36; 107, 108, 109, 112, 113, 114, 116, 120, 121, 124, 128, 132, 134, 252
Nicholson, H. P., 253
Nickerson, B., 63
Nico, R. A., 284
Nicolle, P., 78
Nielsen, E. T., 100, 251
Nijenhuis, E. D., 2, 7
Nirula, K. K., 315, 317, 318
Nishida, T., 296
Nishijima, Y., 273
Nishiyama, H., 78, 79
Nitsche, G., 470
Nitto, M., 317, 323, 328
Nizamlioglu, K., 380
Noble, L. W., 302
Noble, W. B., 269, 272, 284
Noe, G., 254, 256
Nolan, W. J., 161
Noland, J. L., 62
Norton, L. B., 407, 423, 437, 439
Novikoff, A. B., 154
Nutting, W. L., 43, 48, 49, 51, 52

O

Oberberger, J., 213
O'Connor, B. A., 291, 328
O'Connor, C. T., 411
Oettingen, H. von, 220
Offenhauser, W. H., 100
Ohaus, F. van, 325
Ohnesorge, B., 463
Ojeda, E., 77, 80, 81, 82
Okada, I., 169
Oldroyd, H., 216, 223, 254
Olson, A. L., 313
Olsufiev, N. G., 258
O'Neal, E. J., 437
Onishi, N., 162, 167, 168, 169
Orlando, A., 477
Orr, L. W., 452
Osawa, S., 79
Osborn, H., 337, 422, 423, 435, 436
Oseda, E., 68
Ossiannilsson, F., 88, 89, 91, 92, 100, 384
Ostlund, E., 14

P

Packard, C. M., 269
Paddock, F. B., 171, 173
Padilla, J. M., 369
Pagden, H. T., 318
Paine, J., 473
Paine, R. W., 291, 293
Painter, R. H., 267-90; 69, 70, 176, 254, 267, 268, 269, 272, 275, 276, 277, 279, 280, 281, 283, 284, 431
Painter, T. S., 147
Palm, C. E., 426, 427
Palm, N. B., 149, 151, 156
Palmén, E., 209, 225
Pant, N. C., 45, 48, 50, 52
Paramonov, S. J., 218
Parencia, C. R., Jr., 391, 392, 393
Park, O., 224
Park, O. W., 161, 167, 168, 169, 170, 171, 173, 176
Parker, L. B., 326
Parkhurst, J. D., 415
Parkin, E. A., 39, 48, 59, 404
Parks, T. H., 432, 434
Parr, H. C. M., 416
Parrott, P. J., 335
Pascal, M., 76, 83
Pasquinelly, F., 88, 90
Patch, L. H., 279
Patchett, G. G., 363
Patterson, F. L., 269, 272, 275
Patterson, J. T., 223
Patton, R. L., 58, 62, 63, 64, 65, 66
Paulcke, W., 147, 155
Paules, L. H., 412
Paulian, R., 216, 311
Payne, F., 153
Paynter, O. E., 359
Peace, T. R., 452, 456
Peacock, A. D., 151
Pearce, G. W., 408
Pearse, A. G. E., 154
Pederson, C. E., 437
Peer, D. F., 170
Peklo, J., 46, 48, 50
Pellett, F. C., 170, 171, 173
Pemberton, C. E., 291
Pence, R. J., 370, 371
Pennaiya, B. W. X., 273
Penny, L. H., 268, 271, 272, 274, 277, 284
Pepper, B. B., 437
Pepper, J. H., 62, 434
Pepper, J. O., 317
Pereira, F. S., 312, 325
Pérez, S. J., 48, 50
Peri, C. A., 359
Peringuey, L., 325
Perlman, M. H., 262
Perrot, J., 138, 139, 140
Perry, A. S., 359
Perry, W. J., 241
Perucci, E., 395
Pesho, G. R., 424, 425
Pessoa, S. B., 312, 315
Peters, D. C., 269, 280, 284
Peters, R. F., 414
Peterson, A., 260
Peterson, A. S., 269
Peterson, B. P., 456
Peterson, B. V., 253
Peterson, G. D., Jr., 298
Petralia, L., 391
Peyerimhoff, P. de, 224
Pfadt, R. E., 412
Pfeiffer, S., 461
Pfrimmer, T. R., 390, 392
Philip, C. B., 223
Philips, F. M., 369
Philips-Roxane, N. V., 364
Phillips, A. M., 302, 304
Phillips, E. F., 170
Phillips, W. J., 314, 318, 322, 324, 327, 329
Pickard, E., 254
Pickett, A. D., 368, 451
Pielemeier, W. H., 89, 90
Pielou, D. P., 383
Pierce, G. W., 87, 89, 90
Pieters, A. J., 438
Pimentel, D., 407, 409
Pinotti, M., 269
Piquett, P. G., 403

Plank, H. K., 281, 314, 319, 323
Plaut, N., 318
Plumb, G. H., 369
Polhemus, M. S., 167, 168
Pollard, D. G., 313, 317
Pollard, H. N., 368
Pollister, A. W., 154
Ponomavenko, V. F., 415
Poos, F. W., 422, 423, 431, 432, 439
Popham, W. L., 335-54
Popov, V. V., 225
Portman, R. F., 414
Posnette, A. F., 469
Potter, C., 384
Potter, E., 194, 204
Potts, R. W. L., 324
Potts, S. F., 454
Power, M. E., 1, 2
Pratt, J. J., Jr., 12
Pratt, M. J., 369
Prebble, M. L., 449, 450 451, 458, 462, 463, 464
Prentice, I. W., 474
Prestage, J. J., 23, 31
Pringle, J. W. S., 5, 7, 10, 11, 87, 88, 89, 91, 92, 94, 96, 100
Pritchard, A. E., 372
Prochnow, O., 87, 92
Prosser, C. L., 1, 9
Pryer, H., 253
Puchta, O., 41, 44, 46, 47, 49, 50, 52, 53, 54
Pumphrey, R. G., 93
Pumphrey, R. J., 93, 97

Q

Quarterman, K. D., 406, 407, 410, 415
Questel, D. D., 382
Quinton, R. J., 431

R

Rabb, R. L., 394, 395
Rabe, W., 98
Rabes, I., 151
Radeleff, R. D., 411
Radke, M. G., 369
Ragge, D. R., 99, 219
Rainwater, C. F., 381, 390, 391, 392, 393
Ranade, V. D., 150, 152
Randolph, N. M., 379
Rao, V. V., 404
Rasso, S. C., 260
Rathburn, F. L., 296
Ratliff, F., 31
Rau, P., 93
Raun, E. S., 407, 411, 412
Raw, F., 317, 323
Rawat, R. R., 269
Ray, H. N., 155
Rayment, T., 170
Redmond, D. R., 449
Reeher, M. M., 431
Reeks, W. A., 294, 458, 459, 460
Reese, C. R., 453
Reeves, G. I., 432, 434
Refai, F. Y., 278
Regnier, R., 313, 317, 321
Regteren Altena, C. O. van, 216, 217
Rehn, J. A. G., 212, 219
Reid, W. D., 385
Reid, W. J., Jr., 423
Reindorp, E. C., 147
Reinhard, H. J., 317, 321
Reininghaus, H., 169
Reisch, J., 454
Reiser, R., 58, 61, 62, 63, 64, 66, 67
Reiss, H., 213
Reitz, L. P., 275
Remington, C. L., 221, 250
Rensch, B., 2
Resnick, S. L., 403
Revell, I. L., 176
Reynolds, H. T., 383, 387, 424, 425, 429
Rhoades, M. V., 32
Rhoades, W. C., 377, 378
Ribbands, C. R., 169
Ricciardi, I., 244
Rich, E. R., 113
Rich, S., 361, 369
Richard, G., 23, 95, 98
Richards, A. G., 37-56; 1, 30, 40, 41, 42, 43, 44, 46, 47, 50, 52, 53, 54
Richman, S., 113
Richmond, H. A., 450, 462, 463 463
Ricker, W. E., 219
Ridgway, R. L., 441
Riehl, L. A., 358, 369
Riek, E. F., 218
Ries, E., 143, 149, 151, 152
Riley, C. V., 438, 439
Ringuelet, R. A., 215
Ripley, L. B., 303
Ripper, W. E., 368, 386, 387, 795, 456
Ris, H., 163
Risler, H., 95, 164
Ritcher, P. O., 311-34; 312, 313, 315, 316, 317, 318, 320, 321, 322, 323, 324, 326
Rivnay, E., 297
Rizki, M. T. M., 49
Roback, S. S., 223
Roberts, D. W. A., 271
Roberts, F. H., 356
Roberts, F. M., 471
Roberts, I. H., 368
Roberts, J. E., 268
Roberts, W. C., 167, 168, 174
Robins, P. A., 416
Robinson, G. G., 249, 366
Rockstein, M., 13
Rockwood, L. P., 431, 434, 438, 439
Rodriguez, J. G., 68
Rodriguez, J. L., Jr., 358, 369
Rodriguez, L. D., 68
Roeder, K. D., 1-18; 1, 3, 5, 6, 7, 8, 9, 11, 13, 14, 15, 19, 21, 24, 25, 27, 29, 30, 31, 32, 90, 94, 98, 162
Rogoff, W. M., 368, 411
Rosbaco, U. F., 271, 284
Rosberg, D. W., 369
Rosenberger, C. R., 385
Rosenthal, I., 362
Ross, H. H., 207, 208, 210, 212, 213, 214, 215, 217, 218, 220
Rota, P., 278, 379, 381
Roth, L. M., 92, 93, 95, 100
Rothenbuhler, W. C., 161-80; 165, 166, 167, 168, 173, 176, 198
Roubaud, E., 232, 234, 237, 238
Roussel, J. S., 392
Rovida, E., 77
Rowell, 413
Roxane, N. V P., see Philips-Roxane, N. V.
Roys, C. C., 7, 25, 28, 30
Rozeboom, L. E., 232, 233, 241, 242, 243
Rubinson, A. C., 146, 156
Rubis, D. D., 284
Rubtzov, I. A., 253, 254
Rudnick, I., 100
Rupp, H., 416
Ruppel, R. F., 379
Ruppert, K., 461
Rushton, W. A. H., 29
Russell, C. P., 147
Russell, P. F., 404
Rutschky, C. W., 381
Ruttner, F., 162, 167
Rybicki, M., 45

S

Saalas, V., 450
Sacktor, B., 356
Sahashi, Y., 64
Sailer, R. I., 222
Saito, A., 57, 59
Sakagami, S. F., 165
Sakai, T., 169
Salaman, R. N., 477
Saldarriaga, A., 379
Salmon, J. T., 209, 218, 219, 221
Salmon, S. C., 275
Salt, G., 109
Sampson, W. W., 409
Sanderson, A. R., 162
Sanford, K. H., 456

Sankar, D. V.S., 64
Sarma, P. S., 64, 65
Satava, J., 46, 50
Satoh, K., 32
Saulsbury, A. O., Jr., 430, 431
Savel'ev, D. V., 412
Säve-Söderbergh, G., 202
Savile, D. B. O., 209
Scales, A. L., 390, 391, 392
Scaramuzza, L. C., 293
Scavone, G., 391
Schaeffenberg, B., 33, 327
Schafer, J. F., 269, 272, 275
Schäfer, R., 371
Schaller, F., 88, 90, 94, 98, 100
Schaper, P., 273, 281
Scharrer, B. C. J., 15
Schaufer, C. W., 430
Schechter, M. S., 403
Scheel, C. A., 68
Schenker, P., 383
Schief, A., 89, 95, 100
Schilder, F. A., 210
Schimitschek, E., 451, 452, 462
Schindler, U., 452
Schlehuber, A. M., 267, 268, 269, 272, 279, 283, 284
Schlottman, L., 143, 154
Schmidt, H., 38, 46, 435
Schmidt, J. W., 269
Schmidt, K. P., 210
Schmitt, P., 438, 439
Schneider, D., 7, 19, 27, 33, 95
Schneider, G., 452
Schneider, H., 39, 41, 44, 45
Schneider, H. A., 176
Schneider, W., 95
Schneider, W. C., 137
Schneiderman, H. A., 4, 11
Scholl, J. M., 437
Schoof, H. F., 406, 407, 408, 409, 413, 415
Schopp, R., 383
Schrader, F., 146, 155
Schrader, G., 388
Schrader, S. H., see Hughes-Schrader, S.
Schread, J. C., 317, 318, 321
Schreiner, J., 313, 316
Schroeder, H. O., 403
Schuh, J., 431, 435
Schuster, R. O., 224
Schwardt, H. H., 407, 411, 423, 427, 437, 439, 440
Schwartz, E., 388
Schwartz, E. L., 175
Schwartz, L. G., 407
Schwartz, W., 51
Schweiger, H., 216
Schwerdtfeger, F., 321, 322, 450, 452, 463
Schwinck, I., 32
Scoggin, J. K., 61
Scott, R., 407
Searles, E., 409
Searls, E. M., 423, 431
Sedee, J. W., 61
Seevers, C. H., 212
Séguy, E., 221, 260
Seidel, F., 148
Seki, H., 78
Seki, T., 80
Sell, R. C., 416
Sellers, W. F., 294, 306, 366, 456, 459, 460
Selman, I. W., 68
Senior-White, R., 404
Serfaty, A., 11
Service, M. W., 237, 238
Shaffer, C. B., 356
Shamer, D. H., 369
Shands, R. G., 284
Shankaranarayana, D., 82
Sharif, M., 185, 186, 188, 190, 193, 199
Sharp, J. F., 414
Shellenberger, J. A., 100
Sherman, F., 437
Sherman, R. W., 340
Shewell, G. E., 222, 253
Shiller, I., 391
Shirozu, T., 221
Shorey, H. H., 423, 441
Shortino, T., 137
Shuman, H., 363
Shute, P. G., 243
Shyamala, M. B., 82
Sidorovnina, E. P., 292
Siebold, C. T. von, 161
Sieglinger, J. B., 269, 275
Sikes, E. K., 189
Sikke, S. M., 284
Silberschmidt, K., 477
Sim, R. J., 313, 322
Simmonds, F. J., 302, 305, 307, 457
Simmons, S. W., 404
Simon, F. J. E., 392
Simon, H. S., 355
Simon, J. E., 393
Simons, J. N., 479
Simpson, G. G., 210, 212, 213
Simpson, L. J., 452
Singh, A., 284
Singh, R., 284
Sivori, E. M., 284
Sleesman, J. P., 269, 387, 389
Slifer, E. H., 23, 30, 31, 96, 149, 150
Sloan, M. J., 411
Slobodkin, L. B., 113
Slykhuis, J. T., 469, 471
Smallman, B. N., 12, 13
Smart, M. R., 413
Smissman, E., 281
Smith, A. C., 273, 385
Smith, C. C., 452, 459, 460
Smith, C. N., 408
Smith, D. C., 269
Smith, D. S., 267
Smith, E. H., 279
Smith, F. F., 361, 372, 422, 469
Smith, F. O., 283
Smith, G. L., 429, 432
Smith, G. M., 268
Smith, H. D., 298
Smith, H. S., 292, 297, 300, 302, 305
Smith, J. B., 336
Smith, K. M., 469-82; 458, 469, 471, 473, 475, 478
Smith, L. B., 317
Smith, L. H., 255
Smith, O. F., 268, 272
Smith, P. M., 384
Smith, R. C., 429, 430
Smith, R. F., 146, 156, 324, 428, 429, 430, 432
Smith, R. O. A., 254
Smith, W. R., 391
Smith, W. W., 415
Smith-White, S., 241, 245
Smyth, E. G., 293
Smyth, T., Jr., 7, 30
Snelling, R. O., 279
Snodgrass, R. E., 161, 162, 182, 183, 187, 188, 189, 190, 191, 192, 195, 196, 249, 258, 260, 261
Snow, G. A., 369
Snow, S. J., 432, 434
Snow, W. E., 254
Snyder, K. D., 68
Söderbergh, S. G., see Säve-Söderbergh, G.
Soika, A. G., see Giordani Soika, A.
Solomon, M. E., 107, 117, 450, 454
Sommerman, K. M., 222
Soose, E., 169
Sorauer, P., 437
Sotavalta, O., 10, 88, 89, 92
Spaul, E. A., 151
Speers, C. F., 455
Spencer, H., 302, 304
Speroni, G., 359
Speyer, E. R., 298
Spielman, A., 234, 235, 237
Spieth, H. T., 33
Spillane, J. T., 408
Sprague, G. F., 176
Sprague, R., 369
Sreenivasaya, M., 82
Srisukh, S., 63
Srivastava, A. S., 423
Staley, J., 249, 250
Stammer, H. J., 37
Stanford, E. H., 268, 272
Stanley, E. L., 262
Stannard, L. J., 220
Starks, K. J., 378, 394, 395
Stauffer, J. F., 58, 61, 63, 64, 66, 67, 281
Stein, F., 137, 143

Steiner, H., 410
Steiner, L. F., 367
Steiner, P. Z., 203
Steinhaus, E. A., 37, 44, 429, 458
Steopoe, I., 151
Sternburg, J., 14
Stevenson, F. J., 269
Stevenson, H. A., 357, 358, 365, 369, 371
Stewart, D., 470
Stewart, F. C., 422
Steyn, J. J., 68
Stitt, L. L., 386, 423
Stoddard, E. M., 369
Stohl, G., 224
Stone, P. V., 386
Stones, L. C., 412
Strenzke, K., 215
Strickland, A. H., 387
Sturtevant, A. P., 171, 176
Sullivan, C. R., 452, 464
Sullivan, W. N., 407, 410
Summerland, S. A., 367
Summers-Connal, S. L. M., 242
Sundaram, T. K., 65
Suneson, C. A., 269, 272, 284
Sutherland, W. W., 361
Svihla, G., 150
Swaminath, C. S., 254
Swammerdam, J., 161
Sweetman, H. L., 109, 291, 432, 433
Swenson, K. G., 385, 431, 437
Swift, H., 154
Swift, J. E., 368, 387, 429
Sylvén, E., 388
Sylvester, E. S., 471, 472, 479
Symes, C. B., 402, 405, 416
Szent-Ivany, J., 186

T

Taber, S., 3rd, 165, 168
Tachibana, K., 317, 323, 328
Tahmisian, T. N., 150
Takahashi, H., 165
Takahashi, J., 64, 78, 82
Takizawa, S., 78
Talhouk, A. S., 380
Tanada, Y., 283
Tanaka, M., 81
Tanasijévic, N., 383
Tate, P., 252
Tauber, O. E., 61, 68
Taylor, C. F., 360
Taylor, K. L., 220
Taylor, N. L., 268, 424
Taylor, T. H. C., 291, 295, 298, 306, 456, 457
Tazima, Y., 77
Tchouvakhine, V., 323
Teesdale, C., 242
Teigs, O. W., 10
Teller, L. W., 435,
Teoman, N., 378
Teranishi, C., 326
Ter Horst, W. P., 365
Terriere, L. C., 355
Tew, R. P., 355, 368
Thalenhorst, W., 450, 451, 455, 462
Thames, W. H., 381
Thames, W. H., Jr., 272
Theodor, O., 214, 256, 257
Therrien, A. A., 368
Thielmann, K., 454
Thiem, H., 321
Thienemann, A., 213
Thomas, H. L., 269
Thomas, H. T., 33
Thompson, C. G., 429
Thompson, G. H., 452
Thompson, P. G., 250
Thompson, R. C. M., 405
Thompson, R. K., 408
Thompson, R. P., 414
Thompson, V. C., 161, 173,176
Thompson, W. R., 107, 115, 116, 118, 119, 120, 121, 123, 124, 125, 126, 129, 132, 299, 306, 456
Thomson, R. C. M., 252
Thornburg, W., 58
Thorpe, W. H., 33
Thorsteinson, A. J., 69, 70, 267
Thurston, H. W., Jr., 360
Thurston, R., 381, 394, 395
Tiberio, M., 80
Tiegs, O. W., 149
Tiel, N. van, 37, 406
Tillyard, R. J., 199, 202, 204, 261, 262, 328
Timm, C., 90, 94, 98
Timon-David, J., 61
Tinbergen, L., 461
Tinbergen, N., 97
Tirelli, M., 395
Tischner, H., 89, 92, 93, 95, 100
Titus, E. G., 431, 432, 434
Tobias, J. M., 79
Todd, H. S., 381
Toggart, W. G., 269
Tokunaga, M., 254
Tombes, A. S., 318
Tonnoir, A. L., 256, 298
Tooke, F. G. C., 295, 450, 457, 460
Torii, K., 77
Torka, M., 273, 281
Tóth, L., 37, 39, 46, 50, 51
Tothill, J. D., 291
Toumanoff, C., 245
Toxopeus, L. J., 208, 217, 218
Traer, M. G., 303
Trager, W., 46, 48, 57, 58, 67, 68, 70, 80
Trapido, H., 246, 403
Traub, R., 368
Travis, B. V., 403, 414
Travis, D. F., 21
Treat, A. E., 6, 90, 94, 96, 98
Trevisan, M., 83
Triulzi, G. A., 80
Tsao, C. H., 407
Tschumi, P., 169
Tsutsi, K., 57, 59
Tucker, K. W., 165
Tucker, R. W. E., 293
Tuft, T. O., 367
Turner, E. C., Jr., 440
Turner, J. G. S., 404
Turner, N., 283
Tuthill, L. D., 220
Tuttle, D. M., 424
Twarog, B. M., 13, 14, 15
Twinn, C. R., 414
Twohy, D. W., 233
Tysdal, H. M., 423

U

Uchiyama, H., 95
Uichanco, L. B., 140
Ukhova, V. P. D., see Derbeneva-Ukhova, V.P.
Ullyett, G. C., 109
Unger, V. H., 362, 363, 372
Unsworth, K., 257
Unterstenhöfer, G., 384
Urbani, E., 154
Urquijo Landaluze, P., 292
Urushibara, H., 58, 59, 62, 63, 64, 65, 66
Ushioda, T., 83
Usinger, R. L., 215
Utida, S., 113
Uvarov, B. P., 59, 61, 67, 211, 216

V

Valley y March, R. G. del, 314, 318
van den Bosch, R., see Bosch, R. van den
Van der Klott, W. G., 12, 13
van der Meer, F. A., see Meer, F. A. van der
Vanderplank, F. L., 100
van der Veen R., see Veen, R. van der
Vanderzant, E. S., 58, 60, 61, 62, 63, 64, 66, 67
Van Dyke, E. C., 215, 216
van Emden, F. I., see Emden, F. I. van
van Hoof, H. A., see Hoof, H. A. van
van Ohaus, F., see Ohaus, F. van
van Regteren Altena, C. O., see Regteren Altena, C. O. van
Van Steenburgh, W. E., 292
van Tiel, N. , see Tiel, N. van, 37, 406

van Weel, P., see Weel, P. van
Varley, G. C., 255
Vassiliev, I. V., 425, 427
Vaughan, E. K., 369
Veen, R. van der, 364, 365, 371
Veenenbos, J. A. J., 386, 388
Vekemans, J., 394
Verly, W. G., 60
Vermeil, C., 237
Vesey-Fitzgerald, D., 299
Viado, G. B., 317
Viale, E., 268
Vibe, C., 215
Vincent, A. B., 449
Vincent, M., 252
Vinson, J., 216
Vité, J. P., 452
Vogel, R., 254
Vogel, W., 320
von Borstel, R. C., see Borstel, R. C. von
von Buddenbrock, W., see Buddenbrock, W. von
von Frisch, K., see Frisch, K. von
von Hörman, S., see Hörman, S. von
von Kohler, H., see Kohler, H. von
von Lengerken, H., see Lengerken, H. von
von Oettingen, H., see Oettingen, H. von
von Siebold, C. T., see Siebold, C. T. von
Voûte, A. D., 464
Vowles, D. M., 2

W

Wachtendorf, W., 452
Wacker, G. B., 371
Wadleigh, C. H., 269
Wagner, H. G., 31
Wakeland, C. C., 432, 434
Walker, J. C., 175
Walker, R. L., 381, 390, 391, 392
Wallace, A. R., 210, 211, 212, 218
Wallace, C. R., 314
Wallace, J. M., 469, 471
Wallace, M. M. H., 383
Wallis, J. B., 313
Walter, E. V., 268, 271, 272, 274
Walters, H. J., 471
Walton, B. C., 368
Walton, R. R., 386
Wanson, M., 253
Warnecke, G., 213
Warren, L. O., 268
Washburn, F. L., 422
Wasman, E., 325
Wasowicz, J., 76
Watanabe, A., 9
Waterhouse, D. F., 58, 59, 60, 80, 259, 262
Waterman, T. A., 1
Waterman, T. H., 21
Waters, W. E., 453, 454
Watson, C. C., 356, 357
Watson, D. L., 413
Watson, L. R., 161
Watson, M. A., 472, 477, 479
Watt, J., 415
Watt, K. E. F., 113
Watts, J. G., 268, 270
Way, M. J., 384
Weaver, C. R., 379, 435, 436, 437, 438, 440
Webb, F. E., 450, 451, 453, 454, 455
Webb, J. E., Jr., 292
Webb, W. E., 452
Weber, H., 143
Webster, F. M., 434, 438, 439
Wedemeyer, J., 433
Weel, P. van, 152
Weerekoon, A. C. J., 255
Weesner, F., 138
Weiant, E. A., 5, 7, 8, 9
Weih, A. S., 99
Weinman, C. J., 377, 379, 382
Weintraub, J., 369
Weis-Fogh, T., 61, 96
Wellenstein, G., 462
Wellington, W. G., 93, 209
Wellman, R. H., 356, 360
Wene, G. P., 268, 271, 272, 274, 381, 386, 387
Werum, L. N., 58
Wesenberg-Lund, C., 250
Weyer, F., 40, 238
Wharton, D. R. A., 32
Wharton, G. W., 225
Wharton, M. L., 32
Wharton, R. H., 405
Wheatley, G. A., 387
Wheeler, M. R., 223
Wheeler, N. H., 422
Wheeler, W. M., 258, 325
Whellan, J. A., 379
Whipp, A. A., 408
Whitcomb, W. H., 313, 317, 322, 328, 329
White, A., 429, 430
White, A. N., 386
White, C. E., 383
White, G. F., 161
White, J., 438
White, M. J. D., 162
White, R. S., see Senior-White, R.
White, S. S., see Smith-White, S.
Whiteside, E. F., 402, 412
Whiting, P. W., 166
Whitney, D. R., 436
Wick, J. R., 140, 142, 148
Wiebe, G. A., 268
Wieman, H. L., 147, 148, 155, 157
Wiersma, C. A. G., 7, 9, 10
Wigglesworth, V. B., 3, 23, 37, 39, 40, 42, 43, 45, 48, 50, 57, 58, 93, 138, 143, 149, 162, 251, 449
Wilcox, J., 385, 387
Wildbolz, T., 322
Wildermuth, V. L., 427, 429
Wilkes, A., 304, 305
Wilkinson, P. R., 22, 405
Willard, H. F., 296
Wille, H., 322
Wille, J. E., 393
Williams, C. B., 208
Williams, C. M., 48, 50
Williams, G. G., 424
Williams, J. R., 296
Williams, J. S., 369
Williams, L. H., 279
Williams, R. B., 258
Willis, E. R., 100
Wilson, C. C., 429
Wilson, C. E., 404
Wilson, C. J., 414
Wilson, E. O., 217
Wilson, H. F., 362, 423
Wilson, H. G., 403, 406, 408
Wilson, J. B., 413
Wilson, J. K., 422
Wilson, J. W., 381
Wilson, L., 137
Wilson, M. C., 268, 269, 424, 382, 383, 436, 437
Wilson, N. S., 469, 471
Wilson, S. G., 412, 416
Wilson, V. J., 9, 10
Wing, R. E., 363
Wingo, C. W., 407
Winteringham, F. P. W., 12, 13
Wirth, W. W., 216, 254
Wittig, G., 3
Wolbarsht, M. L., 24
Wolcott, G. N., 293, 300, 317, 328
Wolfe, H. R., 366
Wolfe, J. E., 100, 278
Wolfe, L. S., 12
Wollerman, E. H., 453
Wood, E. A., Jr., 268, 269, 283, 284
Woodhill, A. R., 217, 222, 241
Woodrow, A. W., 176
Woods, E. F., 92, 98
Woodside, A. M., 440
Wooster, H. A., 65
Wright, D. W., 385, 386, 387
Wu, Y. F., 253
Wulff, V. J., 19, 33
Wyatt, G. R., 58
Wygant, N. D., 452
Wykes, G. R., 32
Wyniger, R., 358, 368

X

Xambeau, P., 328
Xeros, N., 458

Y

Yakhontov, V. V., 432, 433
Yamaguchi, S., 81
Yarnell, S. H., 268, 274
Yasumatsu, K., 301
Yeo, D., 402, 416
Yerington. A. P., 365
Yetter, W. P., Jr., 292
Yops, C. J., 452
Yoshida, T., 63, 68, 77, 81
Yoshitake, N., 79
Young, F. N., 313
Young, M. T., 390
Yuasa, H., 198, 273
Yuill, J. S., 454

Z

Zeller, S. M., 435
Zemp, H., 452
Zia-Ud-Din, 382
Zimmerman, E. C., 209, 218
Zippelius, H. M., 99
Zirkle, C., 161
Zoebelein, G., 258, 259
Zwölfer, W., 451, 452

SUBJECT INDEX

A

Abdominal appendages, 198-99
Abutilon, 470, 477
Abutilon thompsonii, 477
Acalymma vittata (striped cucumber beetle), 268, 269
Acanthocephala, 146
Acanthoceridae, 311
Acanthocerinae
  classification of, 311
  food habits of, 312, 316
  life cycle length, 321
  termitophilous, 325
Acanthocerus, 325
Acanthoscelides obtectus, 150
Acarapis woodi, 174, 366
Acaricides
  action of, 355-76
    ovicidal, 370-71
    on parasitic mites and ticks, 368-69
    residual, 371
    resistance to, 372
    toxicity to different stages, 370
    types of, 371
  activity of insecticides and, 367-68
  chemistry of, 355-76
  insecticidal action of, 366-67
  specificity, 367
Acarina, 355-76, 471
Acarine disease, 174, 176, 366
Acaulia, 281
Accessory nuclei, 151
Acentropus, 199
Aceratagallia sanguinolenta (clover leafhopper), 440
Aceria ficus, 471
Aceria sheldoni (citrus bud mite), 367
Aceria tulipae, 471
Acetylcholine, 11-14, 30
Acherontia atropos, 87
Acoustical behavior of insects, 96-102
Acrididae, 6, 97
  African, 216
  hair sensilla of, 96
  origin of, 219
  sound in sexual behavior, 99
  sounds of, 90
  tympanal organs of, 94
Acridinae, 101
Acrobasis, 194
Acrolophus, 184
Adela, 190
Adelges piceae (balsam wooly aphid), 457
Adelphocoris lineolatus (alfalfa plant bug), 382
Adelphocoris rapidus (rapid plant bug), 382
Adephaga, 143
Adoretini, 323
Adoretus, 317, 323
Adoretus compressus, 314
Adoretus sinicus, 316
Aedes, 413
Aedes aegypti, 405, 406
  control of, 405, 406
  feeding habits of, 242
  food sources of, 250
  hybridization of, 242, 245
  Johnston's organs of, 95
  sound response of, 100
Aedes albopictus, 242, 245
Aedes caspius, 415
Aedes communis, 250-52
Aedes dorsalis, 414
Aedes hexodontus, 251-52
Aedes nigripes, 251
Aedes nigromaculis, 414
Aedes pernotatus, 241
Aedes polynesiensis, 241
Aedes pseudoscutellaris, 241, 242
Aedes punctor, 250
Aedes scutellaris group, 240-42
Aedes scutellaris katherinensis, 241, 245
Aedes scutellaris scutellaris, 241, 245
Aedes sollicitans, 413
Aedes taeniorhynchus, 413
Aedes vigilax, 414
Aegilaliinae, 311
African armyworm, see Laphygma exempta
Agalliopsis novella, 474
Agamermis decaudata, 437
Agathiphaga, 202-3
Agathis diversus, 292
Agathis stigmaterus, 293
Aglais urticae, 59, 60
Agonini, 223
Agriotes mancus (wheat wireworm), 378
Agriotes obscurus, 378
Agrotis segetum, 379
Agrotis ypsilon, 379
Air, 209
Alabama argillacea (cotton leafworm), 391
Alaus, 328
Aldrin
  as acaricide, 367, 368
  control of
    alfalfa pests, 427, 434
    armyworm, 379
    chinch bug, 382
    clover pests, 382
    clover root borer, 440
    cotton pests, 392, 393
    mosquitoes, 405
    spittlebug, 437
    wireworms, 378
Aleurocanthus spiniferus, 298
Aleurocanthus woglumi (citrus blackfly)
  areas of infestation, 350
  biological control of, 297-98, 307
Aleyrodidae, 297-98, 470
Alfalfa (Medicago), 382
  mosaic virus of, 431
  pests of, 382-83, 424-29
  resistant varieties, 271, 273
  varieties of, 424-26, 431, 437
Alfalfa caterpillar, see Colias philodice eurytheme
Alfalfa dwarf, 470
Alfalfa plant bug, see Adelphocoris lineolatus
Alfalfa snout beetle, see Brachyrhinus ligustici
Alfalfa weevil, see Hypera postica
Alkyl chlorinated anisoles, 369
Allethrin, 406
Allotropa burreli, 297
Amblyomma americanum (lone star tick), 369
Ameiva exsul, 328
American cockroach, see Periplaneta americana
Am. Cyanamid 4123, 407
Am. Cyanamid 12008, 392, 395
Amino acids in nutrition, 60-61
Amitus hesperidum, 298
Amoebaleria defessa, 27
Amphimallon, 317, 329
Amphimallon majalis (European chafer), 440
  carabid predators of, 328
  feeding habits of, 313
  as forage pest, 440
  pupation habits, 322
Amphimallon solstitialis, 326

Anabolia nervosa, 190
Anagyrus kivuensis, 297
Anaphoidea nitens, 295-96
Anarhopus sydneyensis, 297
Anasa tristis (squash bug), 68, 269
Anastrepha ludens (Mexican fruit fly), 350
Anatomy, comparative,
of panorpoid larvae, 182-200
abdominal appendages, 198-99
eyes, 187-88
labium of, 193-96
labrum, 185-87
maxillae of, 188-93
messorials, 186, 187
thoracic legs, 196-98
tracheal system, 199-200
Anax imperator, 3
Anicetus beneficus, 301
Anicetus ceroplastis, 301
Anisolabis maritima (sea-side earwig), 143-45, 156
Anisoplia segetum, 323
Anisopodidae, 189, 200
Anomala, 328
Anomala albopilosa, 317, 323
Anomala ansonia var. neopolitana, 328
Anomala binotata, 320
Anomala horticola, 314
Anomala innuba, 320, 323
Anomala nigropicta, 320, 323
Anomala orientalis, 314, 322, 323
Anomala vetula, 314, 317
feeding habits, 314, 317
life cycle length, 323
pupation habits of, 322
Anomalini, 317, 323
Anomis vistitus, 393
Anopheles
distribution of, 222
hibernation requirements of, 259
hybridization among, 243-44
Anopheles albimanus, 244, 246, 406
Anopheles albitarsis, 406
Anopheles aquasalis, 244
Anopheles atroparvus, 252
Anopheles atropos, 251
Anopheles aztecus, 243
Anopheles balabacensis, 405
Anopheles bisignatus, 244
Anopheles culicifacies, 404
Anopheles darlingi, 246, 405-6
Anopheles earlei, 243
Anopheles elutus, 251
Anopheles farauti, 413, 414
Anopheles fluviatilis, 404
Anopheles freeborni, 243
Anopheles funestus, 405, 406
Anopheles gambiae,
blood meals, 252
control of, 404-6
oocyte development in, 251
utilization of food, 251
Anopheles labranchiae atroparvus, 243
Anopheles maculatus, 405
Anopheles maculipennis, 251, 406
Anopheles occidentalis, 243, 252
Anopheles punctipennis, 243
Anopheles quadrimaculatus, 404, 406, 413, 414
control of, 404, 406, 413, 414
hybridization of, 243
Anopheles rondoni, 244
Anopheles stephensi, 95
Anopheles stephensoni, 405
Anopheles subpictus, 95
Anoplura
eggs of, 156
oocyte cytoplasm of, 151
ovary type of, 143
Anoxia, 329
Antennata, 181, 197
Antheraea polyphemus, 58
Anthomyiidae, 260
Anthonomus grandis (boll weevil)
control of, 389
cotton resistant to, 268
early economic history of, 336
spread of, 342, 345, 347
Antibiosis, 279-83
Antibiotics, 44-45
Anticarsia gematilis (velvet bean caterpillar), 440
Antihelmintic action, 369
Antonina graminis (Rhodes-grass scale), 269
Ants
Cetoniinae and, 325
as foragers for food for mosquitoes, 251
nervous system of, 2
as predators of scarabaeid eggs, 328
symbiosis in, 41
see also specific names
Aonidiella aurantii (California red scale), 299, 302
Aonidiella citrina, 299
Apanteles medicaginis, 429
Apanteles solitarius, 459-60
Apanteles tirathabae, 293
Apate, 42
Apechthis ontario, 305
Aphelininae, 304
Aphelinus semiflavus, 425
Aphidius brassicae, 387
Aphids
feeding habits of, 280
ovary type of, 140
plant viruses carried by, 472-75, 476, 477, 478, 479, 480
sound organs of, 88
see also specific names
Aphis fabae (black bean aphid), 278, 384
Aphis gossypii (cotton aphid)
control of, 390, 391, 393
cotton resistant to, 268
vector of plant viruses, 431
Aphodiinae
classification of, 311
food habits of
adult, 312
larvae, 315
life cycle length, 321
Aphodius, 320, 321, 328
Aphodius fimetarious, 313
Aphodius howetti, 110, 315
Aphodius lividus, 325
Aphodius paradlis, 315
Aphodius porcus, 325
Aphodius pseudotasmaniae, 315
Aphodius subterraneus, 313
Aphycus helvolus, 300-1, 366
Aphycus lounsburyi, 301
Aphytis chrysomphali, 366
Aphytis lingnanensis, 299
Aphytis maculicornis, 300
Aphytis mytilaspidis, 300
Apioceridae, 222
Apion aestivum, 383
Apion godmani, 385
Apion trifolii, 383
Apis mellifera (honey bee)
acaricides and, 366
acarine disease of, 366
artificial insemination for, 161
breeding
artificial insemination, 174-75
egg-laying rate and heterosis, 175
importation of stock, 170
inbreeding depression, 175
nutrition effect on, 169
pollination, 176
selection of females only, 170
size of brood cell in, 169
temperature, effect, 169
use of isolated mating yards, 170-74
variability in, 167-70
chemical assay, 12
chromosomes, number

of, 162, 163, 164
cytology of, 162-66
exceptional individuals, 165-66
normal individuals, 162-65
development of 162-66
distribution of, 225
eggs of, 156
enzymatic variation, 169
foulbrood, 169, 170-74
inheritance of resistance to, 170-74
natural selection for resistance, 173-74
genetics of, 161-67
gynandromorphs, 165-66
haploid origin of drones, 167
impaternate females, 165
mosaic females, 165
mosaic males, 165
mutations, 166-67
radiation, 167
insemination, artificial, 161, 163, 164
mutants of, 166-67, 168
nervous system of, 2
ovariole of, 144
parthenogenesis in, 161
sex determination, 162-66
strains of, 169, 170, 171
unidentified esters in, 14
Apistomyia elegans, 257
Apogonia ceribricollis, 313
Apogonia expeditionis, 313
Aposymbiotic, definition, 38
Apterobittacus, 198
Apterobittacus apterus, 186
Arabis hirsuta, 478
Arachnida, 225
Arachnids, 22
Arachnocampa, 187
Aramite, 355-56, 366-72
Arctiidae, 94
Argas persicus (fowl tick), 369
Arixenia, 147
Arthropods
chemoreception in, 19-36
transmission of plant viruses by, 469-82
Artificial insemination 161
Artona catoxantha, 292
Arygyroploce leucothreta (false codling moth), 303
Ascogaster quadridentata, 293
Ascorbic acid, 66-67
Asilidae, 260, 327
Aspidiotiphagus, 300
Aspidiotus destructor (coconut scale), 298-99
Aspidiotus perniciosus (San Jose scale), 302, 336
Asterolecanium pustulans (pustule scale), 300
Aster yellows 470, 475-76, 480
Asymbiotic, definition, 38
Atherigona indica, 273
Atherix 258
Atrichopogon, 254-56
Atrichopogon pollinivorus, 255, 256, 259
Atrichops crassipes, 258
Atropsyche, 196, 220
Atta, 325
Aureomycin, 44-45
Austroicetes cruciata, 117
Austroleptis, 258, 321
Autogeny, 234, 235
Automeris io, 59
Autoserica castanea, 321
Auxines, 81
Azobenzene, 366, 372
Azoxybenzene, 366

B

Babesia, 40
Bacillus anthracis, 60
Bacillus euloomarahae, 327
Bacillus larvae, 170
Bacillus lentimorbis, 327
Bacillus lentimorbis var. Australis, 327
Bacillus popilliae, 327
Bacteria, 327
Bactericidal action, 369
Bacteriocytes, definition, 38
Bacteroids
of cockroaches
culturing of, 50
loss of, 51
staining of, 49
Balsam woolly aphid, see Adelges piceae
Barium ethylene bis-dithiocarbamate, 369
Bathyplectes corvina, 434
Bathyplectes curculionis, 433
Bathyplectes tristis, 433
Bats, 94
Bayer 21/199, 407
Bdelonyssus sylvarium (northern fowl mite), 368
Beans, 383-88
Beauveria densa, 327
Beauveria globulifera, 434, 439
Bed bug, see Cimex lectularius
Bees, 7 (see also Apis mellifera)
accessory nuclei, 151
bumble, 10
population regulation, 122
see also specific names
Beet yellows, 472
Bemisia tabaci, 477
BHC
for control of
armyworm, 379
clover pests, 383
clover root borer, 440
corn borer, 381
cotton pests, 391
cruciferous pests, 387, 388
flies, 403, 404, 405, 406, 407, 411, 412, 414, 415, 416
forest insects, 452
greenbug, 380
potato leafhopper, 423
spittlebug, 437
wireworms, 380
Bibio, 189, 194
Bibio marci, 185
Bibionidae, 186, 259
cleavage line, 183
cranial extensor of dististipes, 192
labium of, 195
maxilla of, 189
tentorial bridge, 185
tracheal system of, 199, 200
Biological control, see Control, biological
Biotin, 63-64
Biotypes, 283
1, 2-Bis (1-hydroxyphenylthio) ethane, 369
1, 2-Bis (phenylthio) ethane, 358
Bis (phenylthio) methane, 358
Bis (o-hydroxyphenylthio) methane, 369
Biting midges, see Ceratopogonidae
Bittacidae, 183
cranial flexor of dististipes, 191
feeding habits of, 262
lateral tractors lacking, 186
tentorial adductors of basistipes, 190
tentorial adductors of cardo, 190
Bittacus, 192
labium of, 196
lateral tractors missing, 186
stipital flexor of dististipes, 193
thoracic legs of, 198
Blaberus, 3-4
Black pecan aphid, see Melanocallis caryaefoliae
Black spot of citrus, 337
Blatta orientalis (oriental cockroach)
germinal vesicle of, 150
mycetocytes of, 41-43

symbiote elimination in, 44-45, 46
symbiote transplants, 52
Blattella germanica (German cockroach)
bacteroid survival in, 50
cholesterol utilization in, 62
mycetocytes of, 41-43
symbiote elimination in, 44-45, 46, 47
symbiote transplants, 52
Blepharocera tenuipes, 257
Blepharoceridae, 257, 261
Blissus leucopterus (chinch bug), 380, 382
control of, 380, 382
plant resistance to, 269, 272, 275
Blow flies
feeding reaction, 32
population regulation, 123
self-regulation of populations, 109-110
Bolboceras, 319
Bolboceras darlingtoni, 313, 322
Bolboceras gallicus, see Bolbolasmus gallicus
Bolbolasmus gallicus, 313
Boll weevil, see Anthonomus grandis
Bombyliidae, 260
Bombyx, 26, 167
Bombyx mori
nutrition of, 75-84
amino acid requirements, 60
auxines in, 81
carotenoid utilization in, 63
digestion and assimilation, 79-82
digestive enzymes, 80-81
fat in diet, 61
inorganic constituents, 78-79
metabolism, 82
mulberry leaves, substitutes for, 76
phosphorus compounds, 81
pigment absorption, 81
qualitative aspect of, 76-77
quantitative aspect, 75-76
vitamins in, 64, 65, 67, 77-78
olfaction in, 27
olfactory stimuli, 32-33
oogenesis, 155
protein yolk, origin of, 152
sounds of, 98-99
subgenual organs, 95
trophocytes of, 146, 147
Bordeaux, 423
Boreidar
abdominal appendages, 198-99
classification of, 203
new rank, 203
cleavage line, 183, 185
cranial flexor of dististipes, 191
labium of, 193-96
labrum of, 186
lateral retractors lacking, 186
maxilla of, 188
origin of antennae, 188
stipital flexor of dististipes, 193
tentorial abductors of basistipes, 190
tentorial abductors of cardo, 190
tentorial bridge of, 185
thoracic legs, 197-98
tracheal system, 199-200
Boreus
differences between Panorpa and, 204
eyes of, 188
labium of, 194
thoracic legs of, 198
Brachet's method, 154
Brachycera, 186
classification of, 205
comparison with other Diptera, 249-66
feeding habits of, 249-66
labrum of, 186
Brachypterous jumping flightless moths, 221
Brachyrhinus ligustici, 426
life cycle of, 426-27
Bracon, 302
Brevicoryne brassicae,
control of, 386, 387
plant virus transmission, 473
sugar requirements of, 59
Brevipalpus inornatus (privet mite), 367
Brevipalpus lewisi (citrus flat mite), 367
Brontispa frogatti selebensis, 295
Brontispa mariana, 295
Broscini, 223
Bruchophagus gibbus (clover seed chalcid), 440
Bruchus brachialis (vetch bruchid), 440
Bruchus pisorum (pea weevil), 385
Bruchus rufimanus, 385
Bryobia praetiosa, 368
Bucculatrix thurberiella (cotton leaf perforator), 393
Bufo marinus, 328
Bursa bursa pastoris, 430
Butoxy polypropylene glycol, 356, 411

C

Cabbage aphid, see Brevicoryne brassicae
Cabbage black ringspot, 473, 478
Cabbage maggot, see Erioischia brassicae
Cacao, 470
Cactoblastis cactorum, 109
Caddisflies, 208
Calcium arsenate
control of
alfalfa pests, 429, 434
cotton pests, 390, 391, 392
Calidea dregii, 393
California red scale, see Aonidiella aurantii
Calliphora, 146
acetylcholine in, 12
DDT effect on, 14
flight, 10
Calliphora erythrocephala, see C. vivina
Calliphora vicina, 61
Callosobruchus chinensis (cowpea weevil)
diet of, 59, 62
plants resistant to, 278
self-regulation of populations, 113
Calomel, 386
Calonota, 317
Cambarus bartonii sciotensis, 22
Candida, 49
Cantharis bilineatus, 439
Canthidium, 325
Canthon, 319
Canthon conformis, 325
Canthondeplanatus var. fastuosus, 325
Capitophorus fragariae, 474
Captan, 369
Carabidae
as predators of Scarabaeidae, 327
effect of environment on, 223
endemism of, 216
Carbohydrates
in phytophagous insect nutrition, 58-60
polysaccharides, 58-59
sugars, 59-60
Cardiphylla, 281
Carnitine, 66
Carotenoids, 63
Carpocapsa pomonella (codling moth), 367
biological control of, 292-93
chemical control of, 367
parasite of, 305
Carulaspis visci (juniper scale), 299-300
Caspersson microspectro-

photometric method, 154
Cassidinae, 224
Castelytra zealandica, 313
Catana, 299
Catana clauseni, 297-98
Cauliflower mosaic, 472, 473, 478
Cecropia moth, see Hyalophora cecropia
Celeuthetini, 224
Cenozoic, 213
Cephus (wheat stem sawflies), 380
Cephus cinctus (wheat stem sawfly), 269, 272
  biotypes of, 283
  inherited factors in, 284
  plant resistance to, 269, 276, 278
Cephus pygmaeus (European wheat stem sawfly), 269, 272
Cerambycidae, 224
Ceroplastes rubens (red wax scale), 301
Ceratitis capitata (Mediterranean fruit fly), 6
  biological control of, 296
  eradication efforts for, 338-39
  quarantine of, 337
Ceratoma trifurcata, 471
Ceratomerinae, 222
Ceratophyllus, 193
Ceratopogon communis
  feeding habits, 256
Ceratopogonidae, 95
  feeding habits of, 254-56
  intersexual signalling, 100
  mouth parts of, 255
  sense organ of, 261
Ceratopogoninae, 254
Cercopidae, 470
Cercyonis pegala, 96
Ceroplatus, 187
Cetonia, 328
Cetonia aurata, 315
Cetoniinae
  ant and termite association, 325
  classification of, 311
  food habits of, 318
    adult, 312, 313
    larvae, 315-16, 318
  life cycle length, 321, 323-24
  mating habits of, 324
  pupation habits of, 322
Ceuthorhynchus assimilis (cabbage seed weevil), 388
Ceuthorhynchus rapi (large cabbage shoot weevil), 388
Chaetadoretus cribratus, 314
Chaetexorista javana, 293
Chaoborinae, 250, 259
Chauliognathus pennsylvanicus, 439
Chelonus, 302
Chelonus texanus, 304
Chemoreception, 19-36
  cell of, 20-28
  ecological significance, 33-34
  evolutionary significance, 33-34
  excitation, mechanisms of, 28-30
  peripheral and central nervous integration, 31-33
  sense organ and, 30-31
Chemoreceptor cell
  electrophysiological studies, 25
  gustation, 23-27
  insects, 22-28
  olfaction, 27-28
  other than insects, 20-22
Chilocorus cacti, 300
Chilocorus nigritus, 299
Chilo simplex, see Chilo suppressalis
Chilo suppressalis (Asiatic rice borer)
  chemical diets for, 58
  nutrition of
    amino acid utilization, 60
    fat in diet of, 62
    nucleic acids in diet of, 68
    starch utilization, 59
    vitamins in diet of, 63-67
Chinch bug, see Blissus leucopterus
Chironomidae, 259, 261
  as food for other, 255
  intersexual signalling, 100
  see also Tendipedidae
Chiromyzidae, 222
Chloramphenicol, 44
Chlorbenside, 356-58, 366, 370, 371, 372
  as acaricide, 356-58, 366, 370, 371, 372
Chlordane
  as acaricide, 367, 368, 369
  control of
    alfalfa pest, 427, 434
    armyworms, 379
    cotton pests, 390
    flies, 403, 406, 407, 409, 411, 413, 416
    spittlebug, 437
Chlorinated hydrocarbon insecticides
  as acaricides, 368
  see also specific insecticides
Chlorita biguttula (cotton leafhopper), 282
Chlorobenzilate
  as acaricide, 358-59, 366-72
Chloromycin, 44, 45
p-Chlorophenyl benzene sulfonate, 370-71
Chlorophyll, 68
Chlorthion
  control of
    clover pests, 383
    corn earworms, 381
    cotton pests, 390, 391
    fly, 407
    tobacco pests, 395
Chlortetracycline, 44-45
Choline, 65-66
Cholinergic system, 11-14
Chordotonal organs, see Scolopidial organs
Chorista, 192
  labium of, 196
  lateral tractors lacking, 186
  thoracic legs of, 198
Choristidae, 183
  cranial flexor of dististipes, 191
  lateral retractors lacking, 186
  stipital flexor of dististipes, 193
  tentorial adductors of cardo, 190
Choristoneura fumiferana (spruce budworm), 303, 451
Chorology and zoogeography, 208
Chorthippus, 99, 101
Chorthippus biguttulus, 100
Chorthippus longicornis, 67
Chorthippus parallelus, 99
Chromosomes
  Apis mellifera, 162, 163, 164
Chrysomelidae, 224
Chrysopa, 254, 425
Chrysopa plorabunda, 303
Chrysophilus, 258
Chrysops, 258
Cicada spumaria, 435
Cicuta, 251, 255
Cimex lectularius (bed bug), 49, 155
Circulifer tenellus, 59, 61
Citrus blackfly, see Aleurocanthus woglumi
Citrus bud mite, see Aceria sheldoni, 367
Citrus canker, 337, 339-40
Citrus flat mite, see Brevipalpus lewisi
Citrus mealybug, see Planococcus citri
Citrus red mite, see Metatetranychus citri
Classification

Boreidae, 203
Diptera, 203
Faber's, 97
flies, biting, significance in, 249-66
Neomecoptera, 203-4
primitive Diptera, 26
Scarabaeidae, 311
Siphonaptera, 203, 204
Trichoptera, 203
Zeugloptera, 202-3
Clausenia purpurea, 297
Clemora, 317
Clemora smithi, 326
Clemys insculpta, 254
Climate
and biological control, 459
adverse for, 298
limitation to alfalfa weevil spread, 432
races adaptable to, 304, 305
tolerances, 208
Cloeotus, 316
Clover (Trifolium), 382-83, 422
Clover club leaf, 474
Clover head weevil, see Hypera meles
Clover leafhopper, see Aceratagallia sanguinolenta
Clover leaf weevil, see Hypera punctata
Clover root borer, see Hylastinus obscurus
Cnemarachis, 317
Cnephia dacotensis, 253
Cnidocampa flavescens (oriental moth), 293
Coccinella septempunctata, 387
Coccoidea, 470
Coccophagus, 304
Coccophagus gurneyi, 297
Coccus cossus, 187
Cochliotis, 328
Cochliotis melolonthoides, 313, 317, 322
Cockroaches, 7
aposymbiotic strains, 44
bacteroids of, 48
diet importance for symbiotes in, 53, 54
flight, 11
sex attractant odor, 33
symbiotes of, 39, 40
see also specific names
Coconut moth, see Levuana iridescens
Coconut scale, see Aspidiotus destructor
Codling moth, see Carpocapsa pomonella
Coenochilus, 325
Coenomyia, 328
Coenomyidae, 259, 327
Coffee mealybug, see Planococcus kenyae
Colaenorrhinus, 184
Coleoptera, 181
accessory nuclei, 151
brain size, 2
classification of, 311
cranial promotor of cardo, 190
distribution of, 223-24
flight, 10
ovary of, 140, 143
phylogeny, 181
primitive food habits of, 312
scolopidia of, 95
stipital flexor of dististipes, 193
Colias philodice eurytheme (alfalfa caterpillar), 422
forage pest, 427-29
life cycle of, 428
parasite for, 429
polyhedrosis of, 429
variations in color form, 427-28
Collembola, 181, 219
Colletrichum trifolii, 438
Colocasia, 317
Colorado potato beetle, see Leptinotarsa decemlineata
Commensalism, definition of, 37
Common cattle grub, see Hypoderma lineatum
Communication signals of insects, see Sound
Comperiella bifasciata, 299
Compsilura concinnata, 459-60
Conoderus amplicollis (gulf wireworm), 378
Contarinia sorghicola (sorghum midge), 269, 440
Continental drift, theory of, see Wegenerian Hypothesis
Control
biological
of Aleyrodidae, 297-98
of California red scale, 299
of coconut leaf-mining beetle, 294-95
of coconut moth, 291-92
of coconut scales, 298-99
of coconut spike moth, 293
of codling moth, 292-93
cyclamen mite, 301
ecological relationships and, 307-8
of eucalyptus snout weevil, 295-96
of European spruce sawfly, 294
evaluation of parasite and predator effectiveness, 305-6
of fig scale, 300
forest insects, 456-62
of fruit flies, 296
of imported cabbageworm, 293
immunity problem in, 294
insecticidal check method and, 306
insular conditions as conducive to, 307
of juniper scales, 299
of larch sawfly, 294
mass production of parasites, 302-4
mass production of predators, 302-4
of olive scale, 300
oriental fruit moth, 292
present status of, 306-8
of prickly pear, 109
research relating to, 302-6
of red wax scale, 301
results of, 291-302
sex ratio of laboratory stocks, 305
studies, 304-5
of sugarcane borer, 293
time factor in, 306
concepts of, 401-2
evaluation of, 402-3
fly in structures, 403
forage insects, 421-48
forest insects, 449-68
Coprinae
classification of, 311
food habits of, 312
interrelationships with other insects, 325
life cycle lengths, 321
nidification, 318-19
Copris, 319
Coptosoma, 45
Corcyra cephalonica, 64, 65
Cordyceps, 327
Coreid bugs, 155
Corixa striata, 94
Corixidae, 220
sounds of, 88, 90, 100
Corn
pests of, 380-82
resistance varieties, 273-75, 277-78
Corn earworm, see Heliothis armigera and H. zea
Corn mosaic, 470
Corn silk fly, see Euxesta stigmatias
Corn wireworm, see Melanothus communis
Corpora pedunculata, 2
Corymbites cupreus, 328
Cossonimae, 224

Costelytra, 317
Costelytra zealandica, 322, 323, 326
Cotalpa lanigera, 323
Cotinis, 323
Cotinis nitida (green June beetle)
  feeding habits of, 315, 318
  forage insect pest, 440
  pupation habits of, 322
Cotinis texana
  feeding habits, 315
  fungus disease of, 327
  pupation habits of, 322
Cotton aphid, see Aphis gossypii
Cotton leafworm, see Alabama argillacea
Cotton pests, 389-93
Cowpea weevil, see Callosobruchus chinensis
Coxiella popilliae, 327
Crabronidae, 225
Cranberry false-blossom, 470
Cranial extensor of dististipes, 191
Cranial flexor of dististipes, 191
Cranial promotor of cardo, 190
Cranium, 182-85
Cremastocheilus, 325
Crioceris asparagi (asparagus beetle), 336
Crossbreeding
  Aedes scutellaris group, 241
  Culex pipiens group, 237-40
Crustacea
  chemoreceptors of, 20-22
  neuromuscular mechanism, 7, 9, 10
Cryptocercus
  symbiote, elimination of, 43
  symbiote interchange, 51, 52
Cryptognatha nodiceps, 298-99
Cryptolaemus montrouzieri, 296
Ctenicera, 328
Ctenolepisma, 46
Cuban fly, see Lixophaga diatraeae
Cucumber mosaic virus, 473, 477
Cucurbitae, 302
Culex apicalis, 250
Culex autogenicus, 232
Culex autogenicus sternopallidus, 232
Culex autogenicus sternopunctatus, 232
Culex fatigans
  difference between pipiens and, 233
  taxonomy of, 244
Culex globocoxitus, 232, 239
Culex molestus, 232-40, 242
  taxonomy of, 244
Culex pallens, 239
Culex pipiens
  autogenous race of, 252
  blood meal and flight, 252
  food sources of, 250
  hibernation of, 252
  taxonomy of, 244
Culex pipiens australicus, 232
Culex pipiens berbericus, 232
Culex pipiens fatigans, 232-40
Culex pipiens group, 232-40
  crossbreeding, 237-40, 245
  mutations in, 235-37
Culex pipiens molestus, 405
Culex pipiens pipiens, 232-40, 242
Culex pipiens quinquefasciatus, 232
Culex tarsalis, 414
Culicidae
  blood-sucking habits of, 261
  distribution of, 222
  food sources, 250-51
  lateral labral retractors, 187
  maxilla of, 189
  moulting process of, 200
  mouth parts of, 249-50
  oocyte development, 251-52
  origin of antennae, 188
  as pests, 231-48
  tentorial bridge, 185
  tentorial bridge, absence of, 185
  utilization of food, 251-53
Culiciformia, 216
Culicoides
  blood meal in ovary development, 255
  evolution of, 223
  relation to Leptoconops, 254
Culicoides anophelis, 254
Culicoides furens, 254, 403
Culicoides gigas, 255
Culicoides nubeculosus, 255, 256
Culicoides oxystoma, 254
Culicoides piliferus, 254
Culiseta impatiens, 252
Curlytop of sugar beet, 470
Curupira torrentium, 257
Cyclethrin, 403, 411
Cyclocephala, 324
Cyclocephala borealis, 315, 324
Cyclocephala immaculata, 315, 318
  life cycle length, 323
  mating habits of, 324
  pupation habits of, 322
Cyclorrhapha
  classification of, 205
  comparison with other Diptera, 260
  maxilla of, 189
  tracheal system of, 200
Cynips, 224
Cyrtopeltis modestus (tomato bug), 283
Cytology, 162-66
  Apis mellifera, 162-66
  tools of, 137

D

Dacetini, 224
Dacnonypha, 190, 203, 204
Dacus cacuminatus, 100
Dacus cucurbitae, 60, 296
Dacus dorsalis (oriental fruit fly)
  amino acid requirements, 60
  biological control of, 296, 305
  eradication of, 339, 349
  synthetic foods for, 303
  vitamins in diet of, 63
Dacus oleae (olive fruit fly), 337
Dacus tryoni, 100
Dahlbominus fuscipennis
  new strains of, 304
  as parasite for sawfly, 294, 458
  sex ratio of, 305
Daphnia pulicaria, 113
Dasyhelea
  blood-sucking habit loss, 259
  feeding habits, 256
  ovarian development and mouth parts, 255
Dasyheleinae, 254
Dasyneura brassicae (brassica pod midge), 388
Dasyomma, 258
DDT
  as acaricide, 367, 368
  and balance of nature, 133-34
  and biological control, 306
  chemoreceptor cells, effect on, 30
  control of
    alfalfa pests, 383, 429, 434
    armyworm, 379
    bean pests, 384, 385
    clover pests, 382, 383
    clover root borer, 440
    corn borer, 381
    corn earworms, 381
    cotton pests, 391, 393
    cruciferous pests, 386, 387, 388
    flies in structures, 403-7, 409-10
    flies in the open (area fly control), 413-16
    flies on animals, 410-13
    forest insects, 451-55
    pea pests, 384-85, 431

potato leafhopper, 423
potato pests, 388, 389
spittlebug, 437, 438
tobacco pests, 394
effect on
Calliphora, 14
Musca domestica, 7
Periplaneta, 14
Sarcophaga, 7
gypsy moth destruction, 350
limitations of, 450
mosquito eradication, 246
relation of structure to insecticidal properties, 366
resistant flies, 359, 360
unstabilizing effect, 7
DDVP, 408
Deltochilum, 319
Demeton
control of
alfalfa pests, 425
bean pests, 384
corn borer, 381
cotton pests, 392
cruciferous pests, 386, 387, 388
forest insects, 452
pea pests, 384, 431
potato pests, 389
tobacco pests, 393
wireworm, 378
Dendroctonus, 452, 463
Dermacentor albipictus, 369
Dermaptera, 143
Dermestes maculatus, 62
Dermestes vulpinus, see D. maculatus
Derris dust, 408
Desoxyribonucleic acid, 154
DFP, 12
Diabrotica, 284
Diabrotica undecimpunctata howardi (spotted cucumber beetle), 268
Diacamma, 325
Diatraea saccharalis (sugarcane borer), 268, 269, 293
Diazinon
control of
alfalfa pests, 425
cruciferous pests, 387
Eurygaster integriceps, 380
fly control, 407, 408, 410
tobacco pests, 395
wireworms, 378
Dichelonyx, 328
Dictenidia bimaculata, 183
Dictyoptera, 181
Didimus sansibaricus, 328
Dieldrin
as acaricide, 367, 368, 369
control of
alfalfa pests, 427, 434
armyworm, 379
chinch bug, 382
clover pests, 383
clover root borer, 440
cruciferous pests, 388
flies in the open (area fly control), 413, 415, 416
flies in structures, 404-7
flies on animals, 410-12
potato pests, 368, 389
spittlebug, 437
wireworms, 378
Digestive enzymes, 80-81
Dilan, 385, 409
Dimite, 358-59, 366-67, 370-71
Dinoderus minutus, 281
Dinuetes nigrior, 147
Diphenyl sulfone, 370, 371
Diplopoda, 22
Diplotaxis, 324
Diplura, see Entotrophi
Diprion hercyniae (European spruce sawfly), 458
biological control of, 294, 305
parasite of, 458
Diptera
abdominal appendages, 198-99
accessory nuclei, 151
classification of, 205
comparison with other, 249-66
cranial extensor of dististipes, 191-92
cranial flexor of dististipes, 191
distribution of, 221
Drosophila in rearing of, 303
evolution of, 219
eyes of, 187-88
feeding habits of, 261-62
flight, 10, 11
insecticides for control of, 401-20
concepts of, 401-2
labium of, 194-96
labral compressor absence, 187
labrum of, 185-86
maxilla of, 188-89
median retractors of, 186-87
origin of antennae, 188
Palearctic region, 214
Panorpoidea ancestor and, 202
parasites for Scarabaeidae 326
primitive, 261-62
scolopidia of, 95
sounds in mating, 100
stipital extensor of dististipes, 192
stipital flexor of dististipes, 193
tentorial adductors of basistipes, 190
tentorial adductors of cardo, 190
tentorium of, 185
thoracic legs of, 197
tracheal system, 199-200
zoogeography of, 221-22
Dipterex, 407-8
Disease transmission, 405
Distribution, see zoogeography
Ditrysia, 190, 204
Dixidae, 250, 260
Dolichos, 313, 470
Dorsal muscles of common duct of labial glands, 196
Dow ET-14, 407
Dow ET-15, 407
Dreyfusia nüsslini, 452
Drosophila, 1
behavioral studies of, 33
distribution of, 223
mass rearing, 303
mutants in, 167
nervous system of, 1, 2
Drosophila melanogaster, 409
ooplasm volume of, 156
ovarian tissues, origin of, 148
protein yolk, origin, 151, 153
trophocyte nucleus of, 146
Dryas, 250
Durra stem borer, 337
Dutch elm disease, 452
Dwarf disease of rice, 474
Dynastes tityus, 323
Dynastinae
classification of, 311
food habits of
adult, 312, 313
larvae, 316, 318
life cycle length, 321, 323
nidification, 318
pupation habits of, 322
Dysdercus cingulatus, 151
Dysdercus peruvianus (cotton stainer), 393
Dytiscidae, 196
Dytiscus, 6, 93, 96
Dytiscus marginalis (diving beetle), 147, 154

E

Ecology
behavioral studies and, 33-34
and biological control, 307-8, 460-61
of host and symbiote, 52

limitation of alfalfa weevil spread, 432
ways to divide, 37
and zoogeography, 208, 210
Ectofauna, definition of, 211
Edwardsina nigra, 257
Egg laying
feeding habits and, 314
heterosis and, 175
rate and heterosis, 175
Egyptian alfalfa beetle, see Hypera brunneipennis
Elateridae (wireworms)
insecticides for, 378
as predators of Scarabaeidae, 327
Emission bodies, 150
Empidae, 260
Empoasca fabae (potato leafhopper)
and alfalfa yellowing, 421-24
control of, 382, 388, 423
crops resistant to, 268, 269
Empoasca mali, 422
Empusa aphidis, 431
Encarsia formosa, 298
Encyrtidae, 304
Endomitosis, 146
Endopterygota, 181, 187
Endosymbiotic, definition, 38
Endrin
as acaricide, 367
control of
alfalfa pests, 425
chinch bug, 380, 382
cotton pests, 391, 393
pea pests, 431
potato pests, 389
spittlebug, 437
tobacco pests, 393, 394
Enoicyla, 196
Entomophthora, 425
Entomophthora aphrophorde, 437
Entomophthora sphaerosperma, 434
Entotrophi, 181
Environment, 92-93
Ephemeroptera, 219
Ephestia
labium of, 194
mutants in, 167
nutritional requirements, 61
Ephippiger
communication signals, 100
response to signals, 101
sound in sexual behavior, 99
Ephippiger bitterensis, 90, 91
Epilachna varivestis (Mesican bean beetle)
control of, 366, 385
distribution of, 344
first report of, 347
plant resistance to, 268, 272
sound production of, 90, 91
white-fringed beetle comparison, 342
Epilobium, 251
Epithelial sheath, 139, 141
Epithelial plug, 143
Epitrix cucumeris (potato flea beetle), 389, 393
Epitrix hirtipennis (tobacco flea beetle), 393
EPN
control of
alfalfa pest, 383
clover pest, 383
corn borer, 381
cotton pests, 390, 392, 393
wireworms, 378
EPN-300, 431
Eradication programs, 335-54
current status of, 349-51
growth in acceptance of, 335-37
international activities, 351-54
plant quarantine, 352
regional organizations, 352-54
world reporting service, 352
quarantine, 337-38
some successful efforts, 338-40
Erebia, 221
Eretmocerus serius, 297-98, 307
Eriocrania, 190
Eriocraniidae, 202, 204
Erioischia brassicae (cabbage maggot), 386
Eriophyes insidiosus, 471
Eriosoma lanigerum (woolly apple aphid), 271
Ernobius, 49
Erotylidae, 224
Eryica basifulva, 293
Ethyl-DDD, 410
Ethylene dibromide, 452
Eucalyptus snout weevil, see Gonipterus scutellatus
Euetheola, 314
Euetheola rugiceps
life cycle length, 323
parasite for, 327
pupation habits of, 322
Eugaster spinulosus, 88
Eulophidae, 304
Eunemini, 225
Euonymus, 256
Euphoria, 315, 324, 325
Euploea, 221
European chafer, see Amphimallon majalis
European corn borer, see Pyrausta nubilalis
European earwig, see Forficula auricularia
European red scale, see Metatranychus ulmi
European spruce sawfly, see Diprion hercyniae
Eurydema ventralis, 387
Eurygaster integriceps, 380
Euschistus variolarius, 68
Eutinobothrus brasiliensis, 390
Euxesta stigmatias (corn silk fly), 268
Evolution
of Atropsyche, 220
of beetles and host plants, 224
British Isles fauna, 214
chemoreception, significance of, 33-34
chemoreceptors, 21
convergent, example of, 143
of Culicoides, 223
of Jassoidea, 220
Panorpoidea ancestor, 200-2
primitive Diptera, 261
regulatory apparatus of Diptera, 200
significance of acoustical communication in, 101
and speciation, 231
by regions, 211-19
symbiotes and, 39-40
and zoogeography, 207, 208, 210, 212
Excitation, mechanisms of, 28-30
Exenterus, 458
Exopterygotes, 185-87
Extensor of tibia, 197
Extensor of tarsus, 197

F

Faber's classification, 97
Fall armyworm, see Laphygma frugiperda
False codling moth, see Arygyroploce leucothreta
Feeding habits
flies, biting, 249-66
Feulgen reaction, 154
Ficus carica, 76
Fig mosaic, 471
Fig scale, see Lepidosaphes ficus
Fiji disease of sugar cane, 470
Fleas
lack of eyes in larvae, 187
ovary of, 139, 140
thoracic legs of, 197
see also specific names

Flexor of pretarsus, 197
Flexor of tarsus, 197
Flexor of tibia, 197
Flexor of trochanter, 197
Flies (see also specific names)
  control of, 403-17
  repellent for, 356
  sound reception in, 93
Flies, biting
  feeding habits of, 249-66
    significance in classification, 249-66
Flies, black
  feeding habits of, 253-54
  see also Simuliidae
Flight
  neuromuscular mechanism of, 10-11
Folic acid, 66
Follicular epithelium
  histology of, 138-39, 142, 145
  origin of, 148
  regional specialization in, 146
Food habits
  of Scarabaeidae, 312-18
Forage insects and their control, 421-48
  see also specific names
Forcipomyia, 254-56
  feeding habits, 256
  ovarian development and mouth parts, 255
Forcipomyia eques, 254
Forcipomyia ixodoides, 254
Forcipomyia quasiingrami, 255
Forcipomyiinae, 254
  feeding habits, 256, 275
  mouth parts of, 255
Foreign insect introductions, 340-47
Forest insect control, 449-68
  biological, 456-62
    evidence for, 457
    limitation of, 557
    principles of, 460-61
    viruses in, 458
  chemical, 451-56
    assessment of, 454-56
    insecticides for, 451-53
    techniques of, 453-54
  forest management, 462
  general principles of, 450-51
  silvicultural, 462
    principles of, 463-64
  value of small mammals in, 461
Forest insects, 449-68
Forficula auricularia (European earwig), 143, 475
Formica, 325
Formica rufa (red ant), 462
Formicidae, 327
Foulbrood
  American
    Apis mellifera resistance to, 170-74
    control of by special breeding, 170
    host-pathogen relationship, 176
  European
    control of, 170
Fowl tick, see Argas persicus
Fragaria, 427
Frankliniella, 392
Freon, 12, 403
Frit fly, see Oscinella frit
Fulgoridae
  plant virus vectors, 470
Fungi
  as natural enemies for Scarabaeidae, 327
Fungicide
  and acaricidal activity, 369
  glyodin as, 360
  Karathane as, 361
Fungivoridae
  labium of, 195, 196
  labral compressors in, 187
  tracheal system, 199, 200
Fungus, 296
Furethrin, 403

G

Galleria mellonella (greater wax moth)
  symbiote elimination in, 45
  wax utilization of, 62
Ganglion activity, 4-5
Gasteruptionidae, 224
Genetics
  of Aedes scutellaris group, 241-42
  of Apis mellifera, 161-67
  autogeny and, 234-35
  biotypes, 283
  chromosomes of bees, 162-64
  in corn resistance, 282
  factors in resistance, 284
  haploid origin of drones, 167
  inheritance of plant viruses by leafhoppers, 474
  of mosquitoes, 231-48
  mutants, 166-67, 168
  mutation of plant viruses, 476-78
  radiation, 167
  variation in color forms, 427
Genite, 366, 370
Geocoris, 425
Geometridae, 94
Geotrogus, 327
Geotrupes, 313
Geotrupes blackburni, 316
  nidification, 319
  pupation habits of, 320, 322
Geotrupes splendidus, 324
Geotrupes stercorarius, 325
Geotrupes ulkei, 316
Geotrupidae, 311
Geotrupinae, 311
  classification of, 311
  food habits of
    adult, 312, 313
    larva, 316
  life cycle of, 321
  mating habits, 324
  nidification, 318
  pupation habits of, 322
German cockroach, see Blatella germanica
Germarium, 142, 143, 145
Germinal vesicle
  histology of, 139, 140, 144
  of Melanoplus differentialis, 150
Giant fiber systems, 3
Giant nuclei, 142
Giardina's body, 154
Glabrescentia, 281
Glaphyrinae, 313
  classification of, 311
  food habits of, 312
  pupation habits of, 322
Glossina, 100
Glossina morsitans (tsetse fly), 402, 412, 416
Glossina pallidipes, 402, 412, 416
Glossina palpalis, 402, 412-13
Glossina palpalis fuscipes, 416
Glossina swynnertoni, 412, 416
Glossopteris, 211
Glyodin, 360-61, 369
Glyptotendipes paripes (blind mosquito), 413
Gnorimoschema operculella (potato tuberworm), 305, 389
Gnorimus octopunctatus, 324
Golden nematode, 337
Golgi apparatus, 137
Gomipterus scutellatus (eucalyptus snout weevil), 295-96
Gomphocerus rufus, 100
Gonad anlage, 148
Gondwanaland, 219
Gondwanaland theory, 216
Gossypium hirsutum, 279
Gossypium thurberi, 279
Graphognathus leucoloma (white-fringed beetle), 342, 344, 351

Grapholitha molesta (oriental fruit moth), 292
Graptosaltaria nigrofuscata, 4, 91, 92
Grasshoppers, 325
see also specific names
Greater wax moth, see Galleria mellonella
Greenbug, see Toxoptera graminum
Green cloverworm, see Plathypena scabra
Green June beetle, see Cotinis nitida
Green peach aphid, see Myzus persicae
Green vegetable bug, see Nezara viridula
Gryllidae, 90, 99
Grylloblattidae, 219
Gryllus campestris, 92, 100
Gryllulus domesticus, 98
Gustation, 23-27
Guthion, 391, 392
Gypsy moth, see Porthetria dispar

H

Habenaria, 250
Habrobracon, 155
mutants in, 167
sex-allele hypothesis, 166
trophocytes of, 155
Haematophagia, 222
Haematopota, 258
Halotydeus destructor (red-legged earth mite), 367
Hapalothrix lugubris, 257
Harlequin bug, see Murgantia histrionica
Harmolita grandis (wheat strawworm), 269
Harmolita tritici (wheat jointworm), 269
Haroldius heimi, 325
Haroldius philippenensis, 325
Harpagomyia
blood-sucking habit loss, 259
feeding habits of, 259
food sources of, 250, 251
Harpalus erraticus, 328
Harpalus pennsylvanicus, 328
Harpobittacus, 186, 198
Heleidae, 254-56
Heleinae, 254
Helicopsychidae, 186, 191
Heliothis armigera (corn earworm), 381
Heliothis virescens (tobacco budworm), 394
Heliothis zea (corn earworm)
control of, 381, 391
plant resistance to, 268, 271, 272, 274
Heliothrips haemorrhoidalis (greenhouse thrips), 363
Hemimerus talpoides, 147
Hemimetabola, 143
Hemiptera
accessory nuclei of, 151
distribution of, 220
mating sounds of, 100-1
ovary type of, 140, 143
scolopidia, 95
as vectors of plant viruses, 469-71
Hemiteles graculus, 433
Hepialidae, 183, 190, 204
Hepialus, 190, 197
Heptachlor
as acaricide, 367, 368
control of
alfalfa pests, 427, 434
clover pests, 383
clover root borer, 440
flies, 410, 413
spittlebug, 437
wireworms, 278
Heracleum, 251, 255
Hermaphrodites, 140
Hesperidae, 184
Hessian fly, see Phytophaga destructor
Heterodactyla, 260
Heteronychus consimilis, 314, 318
Heteronychus licas, 314, 318
Heteronychus sanctae-helenae, 314, 324, 327
Heteronychus tenuistriatus, 318
Heteroptera
as vectors of plant viruses, 469-71
distribution of, 220
Heterosis and egg laying rate, 175
HETP, 391, 392
Hexapoda, 181
Hibiscus, 470
Hicoria (hickory), 423
Hippelates, 260
Hippoboscidae, 260
Hippodamia convergens, 303
Histeridae, 327
Hister major, 328
Histochemical properties of symbiotes, 49
Histology
of ovarian structure, 137
study of plant virus infected leafhoppers, 476
Holarctic region, 211, 213
Holotrichia, 317
Homoedactyla
comparisons with other Diptera, 249-66
feeding habits of, 248-66
Homoptera, 10
mating sounds of, 101
sound organs of, 88
zoogeography of, 220
Honey bee, see Apis mellifera
Hoplia, 324
Hoplia callipyge, 313
Hop mosaic, 473
Horaiella, 256
Horcias nobilellus, 393
Host
balance of and symbiote, 52-53
specificity
and nutrition, 69-70
of symbiotes, 52
House fly, see Musca domestica
Humidity, 210
Hyalophora cecropia (cecropia moth), 11, 13, 59
Hybosoridae, 311
Hybosorinae, 311, 315
Hybridization, 243-44
in mosquitoes, 231-48
Hydropsyche, 197
Hydropsychidae
labium of, 194, 196
labrum of, 187
lateral retractors of, 186
origin of anterior arms, 185
tentorial adductors of basistipes, 190
Hydroptilidae, 190, 191
Hylamorpha elegans, 314, 323
Hylastinus obscurus (clover root borer)
chemical control of, 383, 440
damage done by, 438
life cycle of, 439
natural enemies of, 439
Hylemya antiqua (onion maggot), 269
chemical diets for, 58
diet requirements
amino acid utilization, 60
fat, 62
nucleic acid, 68
vitamins, 63-66
Hylobius, 452
Hymenoptera
accessory nuclei, 151
brain size, 2
distribution of, 224-25
high wing beat frequency, 10
labrum of, 186
parasites for Scarabaeidae, 326
scolopidia of, 95
subgenual organs, 95
thoracic legs of, 198
Hymenopteroidea, 190
Hypera brunneipennis (Egyptian alfalfa beetle), 383
Hypera meles (clover head

weevil), 383, 440
Hypera nigrirostris (lesser clover leaf weevil), 383, 440
Hypera postica (alfalfa weevil), 336, 431-35
Hypera punctata (clover leaf weevil), 383, 440
Hypoderma bovix (northern cattle grub), 412
Hypoderma lineatum (common cattle grub), 412
Hypoderma tarandi (reindeer warble-fly), 412
Hypoplasia, 1
Hystrichopsylla, 193

I

Icerya purchsi, 140
  hermaphrodites, 140
Imported cabbageworm, see Pieris rapae
Inheritance
  of plant viruses by leafhoppers, 474
  resistance, 174
    to foulbrood, 171
    plant resistance to insects, 283-84
Inositol, 66
Insecticides
  acaricidal activity of, 367-68
  control of
    Diptera, 401-20
  evaluation of, 402
  for forest insects, 451-56
  organic phosphorus, 377-400
    for fly control, 408
    fly resistance to, 409
    for field crop insects, 377-400
  organophosphorus, 372
  treatment of animal shelter with, 406-9
Insect tissue culture, 475
Insemination, artificial
  in Apis mellifera, 161, 163, 164, 174-75
Interfollicular zones, 139, 141, 143
Ips typographus, 452
Ischnaspis longirostris, 299
Isodrin
  as acaricide, 367
  control of
    spittlebug, 437
    tobacco pests, 393
Isoperla, 219
Isoptera, 138, 181, 219
Ithone fusca, 328
Ithonidae, 327

J

Japanese beetle, see Popillia japonica
Jassidae, 470
Jassoidea, 220
Johnston's Organs, 93, 95, 96, 100
Juniper scale, see Lepidosaphes newsteadi
Juniperus bermudiana, 299

K

Kabatiella caulivora, 438
Karathane
  as acaricide, 361-62
    action of, 370
  as fungicide, 361, 369
Karyokinesis, 140
Kelthane
  as acaricide, 362-63
    residual activity, 371
    resistance to, 372
    specificity of, 367
Kermes, 220
Kerteszia, 246

L

Labium, 193-96
Labrum, 185-87
Lactuca sativa, 430
Lambdina fiscellaria, 463
Lamium album, 470
Laparosticti, 312, 315
Laphygma exempta (African armyworm), 379
Laphygma frugiperda (fall armyworm), 379
Large milkweed bug, see Oncopeltus fasciatus
Lasioderma
  symbiote, elimination of, 43, 45
  symbiote interchange, 52
Lasiohelea velox, 254, 256
Laspeyresia nigricana (pea moth), 384
Latania scale, 302
Lead arsenate, 434
Leafhoppers
  feeding habits of, 280
  plant viruses spread by, 474, 476-80
  see also specific names
Lecaniobius utilis, 301
Ledum, 250
Lepidiota, 317
Lepidoptera, 10
  abdominal appendages, 198-99
  accessory nuclei of, 151
  anteclypeal muscles of, 187
  biological control of, 458
  classification in, 202, 204
  cleavage line, 183
  cranial extensor of dististipes, 192
  cranial flexor of dististipes, 191
  distribution of, 221
  Eltringham's Organ, 96
  eyes of, 187-88
  flies feeding on, 254
  labium of, 193-96
  labral compressors of, 187
  labrum of, 186
  maxilla of, 188-90
  origin
    of antennae, 188
    of anterior arms, 185
  scolopidia of, 95
  stipital extensor of dististipes, 192
  stipital flexor of dististipes, 193
  subgenual organs, 95
  tentorial adductors of basistipes, 190
  tentorial adductors of cardo, 190
  tentorial bridge of, 185
  thoracic legs of, 196-98
  tracheal system, 199-200
  and Zeugloptera, 202-3
Lepidosaphes ficus (fig scale), 300
Lepidosaphes newsteadi (juniper scale), 299-300
Leptidae, 222
Leptinotarsa dedemlineata (Colorada potato beetle)
  control of, 368
  lecithin in diet of, 62
  oocyte of, 152
  plant resistance to, 273, 281
  vitamins in diet of, 67
Leptoconopinae, 254
Leptoconops, 254-56
Leptoconops bezzii, 256
Leptoconops irritans, 256
Leptomastidea abnormis, 296
Leptophyes, 475
Leptopterna dolabratus (meadow plant bug), 440
Lesser clover leaf weevil, see Hypera nigrirostris
Lethane, 411, 414
Lethrus aptrus, 316
Leucopholis, 317
Levuana iridescens (coconut moth), 291-92
Lichnanthe, 313
Lichnanthe rathvoni, 316, 322
Lichnanthe vulpina, 316
Life histories, see under species names
Ligyrus gibbosus, 314, 323
Limnephilidae, 186, 190, 191, 199

Limnephilus, 197
Limnephilus lunatus, 191
Limnophora riparia, 199
Limonius, 378
Limulus, 31
Limulus polyphemus, 20-21
Lindane
  as acaricide, 367-69
  control of
    alfalfa pests, 434
    chinch bug, 382
    clover root borer, 440
    flies, 403, 408, 410, 411, 413, 416
    pea pests, 431
    spittlebug, 437
Lindorus lophanthae, 299, 366
Linnaeus, 99
Liogryllus campestris, 99
Lipochondria, 152
Liriomyza, 385
Lissogenius, 325
Lithocolletidae, 194
Lixophaga diatraeae (Cuban fly), 293
Locomotion, mechanism of, 7-10
Locusta, 6
  carotenoid utilization in, 63
  nervous system of, 3, 6
  scolopidia in, 96
  sound reception in, 93
Locusta migratoria, 378
  acoustical communication, 98
  Johnston's organs, 95
  nerves as barrier, 13
  potassium effect on, 14
Locusta migratoria migratorioides, 7-8, 9, 10
Locustidae, 377-78
Locusts, see also specific names, 96
Lone star tick, see Amblyomma americana
Lotus, 436
Lotus corniculatus, 424, 426
Loxostege sticticalis, 62
Lucanidae, 311
Lucerne, see alfalfa
Lucilia, 12
Lucilia caesar, 65
Lucilia cuprina, 113, 114
Lucilia sericata (sheep maggot fly), 412
Luciola, 150, 152
Lyctus, 59
Lygaeonematus abietinum, 455
Lygus, 393, 440
Lygus hesperus, 382
Lygus lineolaris (tarnished plant bug), 382
Lymantria monacha, 451

M

Macrocentrus ancylivorus, 302
  native parasite, 292
  sex ratio, 305
Macrocerococcus, 41
Macrodactylus subspinosus, 313, 324
Macropsis trimaculata, 476
Macrosiphum pisi (pea aphid)
  control of, 384, 431
  life cycle of, 430
  plant food of, 429-30
  plants resistant to, 268, 271, 272
Macrosteles fascifrons, 474-76, 480
Malacosoma disstria, 463
Malacosoma neustria, 59, 60
Malathion
  control of
    alfalfa pests, 383, 425, 435
    armyworms, 379
    bean pest, 384, 385
    clover pest, 383
    corn borer, 382
    corn earworm, 381
    cotton pests, 390-92
    cruciferous pests, 386, 387
    flies, 406-9, 414
    pea pests, 384-85, 431
    potato leafhopper, 423
    tobacco pests, 393, 394
Mallophaga, 143, 151
Malpighian tubes, 64, 78, 163
Maneb, 369
Mantodea, 219
Mastrus carpocapsae, 293, 305
Maxillae, 188-93
Meadow plant bug, see Leptopterna dolabratus
Meadow spittlebug, see Philaenus leucophthalmus
Mealybugs
  biting midges on, 254
  mass production of, 302
  see also specific names
Mecoptera
  abdominal appendages, 198-99
  classification in, 203
  distinctions between Neomecoptera and, 203-4
  cleavage line, 183, 185
  cranial extensor of dististipes, 192
  feeding habits of, 261-62
  labium of, 194-96
  labrum of, 186
  lateral eyes of, 188
  maxilla of, 188
  origin of antennae, 188
  Panorpoidea ancestor and, 201-2
  resemblance to Diptera, 261, 262
  tentorial adductors of cardo, 190
  tentorial bridge of, 185
  thoracic legs of, 197
  tracheal system, 199-200
Medicago hispida (bur clover), 424
Medicago lupulina (black medic), 424
Medicago sativa, 382, 421, 424
  see also alfalfa
Megaloptera, 181, 190, 193
Meimuna opalifera, 92
Meiosis, 162
Melanocallis caryaefoliae (black pecan aphid), 269
Melanoplus, 95, 268
Melanoplus bivittatus, 59
Melanoplus differentialis, 65, 150, 471
Melanotus communis (corn wireworm), 378
Melilotus, 426
Melilotus alba, 427
Meloehelea, 254
Melolontha
  control of, 452
  as defoliators, 313
  feeding habits of, 317
  fungus disease for, 327
Melolontha hippocastani, 321, 322
Melolontha melolontha
  pupation habits of, 320, 322
  vertebrate predators of, 329
Melolonthinae
  classification of, 311
  food habits of
    adult, 312, 313
    larvae, 316
  life cycle length, 321
  mating habits, 324
  pupation habits of, 322
Melolonthini, 317
Melophagus ovinus (sheep ked), 403, 411
Mesoleius tenthredinis, 294, 459
Metabolism, 82
Metacide, 380, 431
Metagonistylum minense (Amazon fly), 293, 304
Metamerism, 182
Metamorphosis
  Bombyx mori, 79
  vitamins and, 46
Metaphycus helvolus, 300-1, 366
Metarrhizium anisopliae, 327
Metatetranychus citri (citrus red mite), 363, 367

Metatranychus ulmi (European red mite), 360, 368-71
acaricides and, 360, 369
action of, 370, 371
early economic history, 336
insecticides and, 368
Metenastes vulgivagus, 324
Meteorus versicolor, 459
Methoxychlor
control of
alfalfa pests, 434
flies, 403, 404, 411, 416
potato leafhopper, 423
spittlebug, 437
Methyl demeton
control of
alfalfa pests, 425
Methyl parathion
control of
corn borer, 381
cotton pests, 390-93
tobacco pests, 394
Metrioptera, 99
Mexican bean beetle, see Epilachna varivestis
Mexican fruit fly, see Anastrepha ludens
MGK, 264, 403
Miccotrogus, 440
Miccotrogus picirostris, 383
Micrococcus nigrofaciens, 327
Microorganisms in, symbiosis
culturing of, 50-51
effects of the insect on, 51-52
histochemical, 49
polymorphism in, 49-50
properties of, 47-49
Micropterygidae, 187, 202, 204
Micropteryx, 186
anatomy of, 183, 186, 188, 197
Microweisea suturalis, 299
Migration, definition of, 208
Minerals, in diet, 67-68, 78
Miridae, 220
Mites, see also specific names, 22
Mitochondria
as origin of protein yolk, 150, 152, 153
staining of, 137
Mitoses, 41, 145
Molting
control by hormones, 51
loss of symbiotes at, 51
Molts, 319
Monotrysia, 190, 194, 204
Morphology nervous system, 1-3
Mosaic of cowpea, 471
Mosaic of oats, 470
Mosquitoes
distribution of, 217, 222
eradication by DDT, 246
hybridization in, 231-48
sound reception in, 93
sound responses of, 100
speciation in, 231-48
Culex pipiens group, 232-40
methods for study of, 231
see also specific names
see also Culicidae
Mucor hiemalis, 303
Murgantia histrionica (harlequin bug), 268, 387
Musca, 12
Musca domestica (house fly), 406
behavioral studies of, 33
chemical assay, 12
control of, 406
DDT effect on, 7
feeding habits of, 260
on chemoreceptors, 30
mass rearing, 303
Muscidae, 199
Muscles
of abdominal appendages, 199
of Calliphora, 10-11
of Crustacea, 10
extensor tibialis, 7-10
flexor tibialis, 9-10
flight, 10-11
innervation, 2-3
of labium, 193-96
of labrum, 186-87
of larval legs, 197-98
for locomotion, 7-10
of Locusta, 7-10
of maxilla, 189-93
neuromuscular mechanisms, 7-11
of Periplaneta, 8
of Platypleura, 9
spiracular, 11
Mushroom bodies, 2, 100
Mutations
Culex pipiens group, 235-36
Mutualism, definition, 37
Mycetocytes, 38, 40-42
Mycetome
anatomical aspects of, 40-43
definition of, 38
Mycetophilidae, 259
Mycobacterium dactylopii, 50
Mydidae, 327
Myremecochilus, 325
Myriapoda, 181, 225
Myzocallidium riehmi (sweetclover aphid), 269
Myzus ascalonicus, 473
Myzus ornatus, 473
Myzus persicae (green peach aphid)
control of, 386, 394
plant resistance to, 269
transmission of plant viruses, 470, 473, 474
factors influencing, 478-80

N

Nabam, 369
Nabis, 425
Nannochorista, 188
Nannochoristidae, 261
Nematocera
classification of, 205, 249-55
cleavage line, 183
cranial extensor of dististipes, 192
feeding habits of, 249-66
labrum of, 187
maxilla of, 189
relationship to other Diptera, 261-62
Neocatolaceus manezophagus, 113
Neoconocephalus ensiger, 92
Neodiprion lecontei, 68
Neodiprion sertifer, 458
Neomecoptera, 203-4
Neotran, 366, 368-70
Nepa cinerea, 151
Nephotettix apicalis, 474
Nervous system, 1-18
activity and impulse transmission, 3-7
chemical factors in nerve activity, 11-15
cholinergic system, 11-14
potassium, 14-15
sodium, 14-15
ganglion activity, 4-5
giant fiber systems, 3
nerve activity and impulse
afferent, 5-7
neuromuscular mechanisms, 7-11
flight, 10-11
locomotion, 7-10
spiracular nerves, 3-4
Nesosisyphus, 319
Nest building, see Nidification
Neuromuscular mechanisms, 7-11
Neuroptera, 181
flies feeding on, 254
ovary of, 140, 143
as predators of Scarabaeidae, 327
Neuropteroidea
cranial extensor of dististipes, 191

cranial promotor of cardo in, 190
labrum of, 186
Nezara viridula, 385, 440
Nicotiana glutinosa, 477
Nicotiana rustica, 476
Nicotine
control of
cotton pests, 390, 391
tobacco pests, 394
neurotoxic action of, 11
Nicotinic acid, 65, 78
Nidification, 318-19
Nilotaspis halli, 350
Nitrogen fixation, 68
Nocardia, 39, 40
Nocardia rhodnii, 50
Nomenclature
of insect sounds, 97
polyphyletic groups, 201-2
see also classification
Northern cattle grub, see Hypoderma bovis
Nosema disease, 176
Nosopsyllus, 193
Nothofagus obliqua, 314
Notodontidae, 94
Notonecta glauca, 98
Notonecta lutea, 214
Nun moth, see Lymantria monacha
Nutrition
Apis mellifera, 169
Bombyx mori, 75-84
and host specificity, 69-70
requirements of phytophagous insects, 57-74
amino acids, 60-61
carbohydrates, 58-60
minerals, 67-68
water, 68
water-soluble vitamins, 63-67
Nymphalidae, 96
Nymphaulinae, 221
Nymphula, 199
Nyssorhynchus, 244

O

Ochodaeinae, 311, 315
Odonata
distribution of, 219
flies feeding on, 254
nervous system of, 10
ovary of, 138
phylogeny of, 181
thoracic legs of, 196
Odontaeus darlingtoni, see Bolboceras darlingtoni
Odontria, 328
Odontria zealandica, see also Castelytra zealandica, 327
Oecanthus niveus, 92
Oecanthus pellucens
sound in sexual behavior of, 99
sound production of, 89-91
Oedipodinae, 101
Olfaction, 27, 28
Oligocene, 224
Ommatidia, 1
Omocestus, 99
Oncopeltus fasciatus (large milkweed bug)
lipides of, 156
nucleic acids to oocyte, 155
ovary structure of, 140-43, 145
water in diet of, 68
Oncopera, 183
Oncotympana maculaticollis, 91
Onion maggot, see Hylemya antiqua
Onthophagus medorensis, 325
Oocyte
accessory nuclei of, 151
blood for development of, 251, 253
of Culex pipiens, 233
description of, 148-49
determinant, 154
germinal vesical and, 150
Golgi elements of, 151-54
Golgi vesicles, 156
growth periods, 156
lipides of, 156
lipide yolk and, 152
maturity of, 254
nucleic acid of, 155
origin of, 148
primary, 138, 141, 145
resorption of, 252
Oogenesis, 143
in Thermobia domestica, 139, 140, 142
Oogonia, 139, 141
Ophionyssus natricus (snake mite), 22, 367
Opius fletcheri, 296
Opius longicaudatus malaiensis, 296
Opius oophilus, 296
Opius tryoni, 296
Opius vandenboschi, 296
Opuntia inermis, 109
Opuntia stricta, 109
Oriental cockroach, see Blatta orientalis
Oriental fruit fly, see Dacus dorsalis
Oriental fruit moth, see Grapholitha molesta
Orius, 425
Orthodichlorobenzene, 452
Orthophlebiidae, 202
Orthoptera
communication signals of, 96-97
Faber's classification, 97
distribution of, 219
ovary of, 138
of Palearctic region, 213
sound in sexual behavior, 99-101
sound organs of, 88
subgenual organs, 95
wing beat frequency, 10
Orthorrhapa, 205
Oryctes
fungus on, 327
parasites for, 326
pupation habits of, 320
Oryctes rhinoceros (coconut rhinoceros beetle), 318
feeding habits of, 314
life cycle length, 323
predator of, 328
Oscinella frit (frit fly), 380
Osmoderma, 318, 320
Osmoderma erimicola, 324
Ovary
development of, 234, 255
and feeding habits, 257, 258, 260
and blood meals, 259
histology of, 138-48
panoistic, 138-40
of Oncopeltus fasciatus, 140-43
polytrophic, 143-47
structure
and vitellogenesis, 137-57
telothrophic, 140-43
tissues
origin of, 147-48
Ovex
as acaricide, 363, 366-72
Oxazolines, 369
Oxtetracycline, 44
Oxythhyrea, 328

P

Palearctic, 213-14
Palpal muscles, 196
Palpomyia, 255
Pangonia, 258
Panorpa, 186
differences between Boreus and, 204
eyes of, 188
labium of, 196
maxilla of, 189
thoracic legs of, 198
Panorpa communis, 192
Panorpidae
cranial extensor of dististipes, 192
cranial flexor of dististipes, 191
feeding habits of, 262

labrum of, 186
lateral tractors lacking, 186
status of, 183
stipital flexor of dististipes, 193
tentorial adductors of basistipes, 190
tentorial adductors of cardo, 190
Panorpoidea
cleavage line, 185
common ancestor of, 200-2
abdomen of, 201
antenna of, 200-1
cranium, 200
labium of, 201
labrum of, 200
legs of, 201
maxilla of, 201
tracheal system of, 201
compressor muscles of, 187
cranial extensor of dististipes, 191
cranial flexor of dististipes, 191
cranial promotor of cardo, 190
labium of, 194-96
labrum of, 185-87
maxilla of, 188-93
stipital extensor of dististipes, 192
suborder list, 204
tentorial adductors of basistipes, 190
thoracic legs, 196-98
Panorpoid larvae
comparative anatomy of, 182-200
abdominal appendages, 198-99
anteclypeal muscles of, 187
cleavage line, 183, 184
compressor muscles, 187
cranium, 182-85
eyes, 187-88
labium of, 193-96
labrum, 185-87
maxillae of, 188-93
messorials of, 186, 187
thoracic legs of, 196-98
tracheal system, 199-200
Panorpoid orders
phylogeny of, 181-206
Pantothenic acid, 66
Papilionoidea, 221
Para-aminobenzoic acid, 66
Paracrinkle virus of potato, 477
Parasitism, definition of, 37
Parastasia, 317
Paratheresia claripalpis, 304
Parathion
control of
alfalfa pests, 425, 434
armyworm, 379
bean pests, 384, 385
chinch bug, 380, 382
clover pests, 382, 383
corn borer, 381
corn earworms, 381
cotton pests, 390-92
cruciferous pests, 386-88
Eurygaster integriceps, 380
flies, 407, 408
greenbug, 380
Locustidae, 377-78
pea pests, 384, 385, 431
potato leafhopper, 423
potato pests, 388, 389
tobacco pests, 393, 394
wireworms, 378
Parcoblatta, 41
Parlatoria blanchardii (date palm scale), 339
Parlatoria oleae (olive scale), 300
Parthenogenesis
in Apis mellifera, 161
in Brachyrhinus ligustici, 426
female progeny by, 165
in Macrosiphum pisi, 430
spotted alfalfa spotted aphid, 425
symbiotes and, 43
Passalidae, 311, 327
Pea aphid, see Macrosiphum pisi
Peach mosaic, 471
Peach yellows, 470, 476
Pea moth, see Laspeyresia nigricana
Pea pests, 383-88
Pectinophora gossypiella (pink bollworm)
amino acid utilization, 60
carotenoid utilization in, 63
control of, 351
by insecticides, 390-91
cotton varieties resistant to, 279
fat in diet of, 61
nucleic acids in diet of, 68
quarantine of, 337
spread of, 342, 345, 347
vitamins in diet of, 63-67
plants resistant to, 268
Pediculoides ventricosus, 294-95
Pediculus, 53, 152
Pelecorhynchinae, 222
Pelecorhyncidae, 260
Pelidnota, 317
Pelidnota punctata, 323
Pemphigus populi-transversus (poplar peticle gall aphid), 303
Penicillin, 44
Pentatrichopus fragefolli, 474
Pentodon idiota, 323
Pentodon punctatus, 318, 323
Periplaneta
acetylcholine in, 12
DDT effect on, 14
gustation, 27
nervous system, 4, 5
Periplaneta americana (American cockroach)
germinal vesicle of, 150, 152
mycetocytes of, 41-43
nerve morphology, 2, 3
nerves as barrier, 13
neuromuscular mechanism, 8-10
olfaction, 28
sheath removal, 15
symbiote elimination in, 44-45
symbiote transplants in, 52
Perla abdominalis, 3
Phaedonia inclusa, 283
Phagocytosis, 294
Phalaenidae, 94, 190
Phalera bucephala, 59
Phanaeus, 318
Phaseolus vulgaris, 59, 62
Philaenus leucophthalmus (meadow spittlebug), 268
biology of, 435
chemical control of, 437
natural enemies of, 437
plants resistant to, 268
populations of, 436
Philaenus spumarius, 437
Philharmostes, 325
Philopotamidae, 190, 191
Phlebotomus, 223, 406
Phlebotomus chinensis var. simici, 406
Phlebotomus major, 406
Phlebotomus noguchii, 257
Phlebotomus papatasii, 406, 415
Phlebotomus perniciosus, 257
Phlebotomus schwetzi, 256
Phormia regina
feeding habits of, 260
gustation in, 23-26
mechanisms of excitation in, 28-30
pheripheral receptor cells, 31-32
sense organ, 31
Phormia terraenovae, 24
Phorodon humuli, 473
Phosdrin, 408
Phospholipides, 62-63
Photoreception, 63
Phyllopertha horticola, 317,

322, 323
Phyllophaga
bacteria as enemies of, 327
as defoliators, 313
feeding habits of, 317
host specificity, 69-70
insect predators of, 328
life cycle of, 321
mating habits, 324
parasites of, 326
pupation habits of, 320
rickettsial disease of, 327
vertebrate predators of, 328
Phyllophaga ephilida, 320-22
Phyllophaga hirticula, 321, 322, 324
Phyllophaga inversa, 321
Phyllophaga rugosa, 324
Phyllotreta, 475
Phylogeny
and zoogeography, 207-8
of the panorpoid orders, 181-206
Physiology of sound production, 88-92
Phytodecta fornicata, 383
Phytolacca americana (poke weed), 423
Phytolaema, 317
Phytomyza atricornis, 385
Phytophaga destructor (hessian fly)
biotypes of, 283
control of, 379-80
inherited factors in, 284
wheat resistance to, 268, 270-71, 272, 275, 277, 278
Phytophagous insects
definition of, 57
nutritional requirements
amino acids, 60-61
carbohydrates, 58-60
host specificity, 69-70
minerals in, 67-68
proteins, 60-61
vitamins, 63-67
water, 68
water-soluble vitamins, 63-67
Scarabaeidae, 312
Phytoptus ribis, 471
Pieris, 387
Pieris brassicae, 60
Piesma cinereum, 470
Piesma quadrata, 470
Pigment formation, 63
Pink boll worm, see Pectinophora gossypiella
Pinnaspis buxi, 299
Piperonyl butoxide
control of
flies, 403, 409, 411-13
Pirazinon, 407
Pissodes strobi, 452
Pisum sativum (peas), 383, 430
Placodidus, 325
Plagiochilus, 325
Planococus citri (citrus mealybug), 296-97
Planococcus kenyae (coffee mealybug), 297
Plant pest act of 1912, 336
Plant virus transmission, 469-82
Plasmodium, 42
Platanus occidentalis, 59
Plathypena scabra (green cloverworm), 440
Platypleura capitata, 91
Platypleura kaempferi, 9, 91
Platypleura octoguttata, 91
Plecoptera, 139, 219
Pleocoma, 313, 316, 319, 321, 324
Pleocoma crinita, 322
Pleocoma dubitalis, 321
Pleocomidae, 311
Pleocominae, 316
classification of, 311
food habits, 312, 313
life cycle length, 321
mating habits, 324
pupation habits of, 322
Pleurosticti, 312, 315
Pleurotropis parvulus, 295
Plutella maculipennis, 67
Podischnus agenor, 314, 323
Podospermum laciniatum, 76
Pollination by bees, 176
Polycentropidae
labium of, 193, 195
labrum of, 186, 187
maxillae of, 191
Polycentropus, 183
Polyhedrosis, 429
Polymorphism, 49-50
Polyphaga, 143
Polyphylla decemlineata, 313, 322
Polyphylla fulla, 321
Polyploidy, 162, 164
Polysaccharides, 58-59
Popillia, 317
Popillia japonica (Japanese beetle)
bacterial diseases of, 327
comparison with Pyrausta nubilalis eradication, 341-43, 347
control of, 351
feeding habits of, 314, 316, 317
life cycle length, 323
parasites for, 305, 326, 327
plants resistant to, 268
pupation habits of, 322
rickettsial disease of, 327
Population
definition of, 119
density, 402
dynamics, 107-36, 246
and public health, 246
meadow spittlebug, 436
natural control, 130-34
regulation, 121-34
Andrewartha-Birch theory of, 126-29
biotic potential, 126
chaos hypothesis of, 124-25
diffusion hypothesis of, 123-24
environmental-fit hypothesis of, 125-26
intrinsic limitation hypothesis of, 126
Thompson's general conclusion, 129-30
self-regulation, 107-21
Aphodius howitti, 110
blow flies, 109-10
Cactoblastis cactorum, 109
Callosobruchus chinensis, 113
criticism of the theory of, 115-21
Daphnia pulicaria, 113
deductive evidence for, 114
density-dependent factors, 107, 116-17
density-independent factors, 107
environmental resistance, 116
field evidence for, 109-12
laboratory evidence for, 112-14
Lucilia cuprina, 113, 114
mechanisms of, 108-9
Thrips imaginis, 110-12, 118
Tribolium confusum, 113
trends, 454-60
Porthetria dispar (gypsy moth)
DDT for control, 451
early economic history, 336, 337
eradication of, 350
Postmental muscles, 195
Potasan
control of
corn borer, 381
potato pests, 388
tobacco pests, 394
Potato flea beetle, see Epitrix cucumeris
Potato leafhopper, see Empoasca fabae
Potato leaf-roll, 473-74
Potato rugose mosaic, 473
Potato tuberworm, see Gnorimoschema operculella
Potato X virus, 471
Potato Y virus, 473
Potato yellow dwarf, 470, 477

Potosia aeriginosa, 315
Potosia cuprea, 325
Praon palitans, 425
Prefollicular nuclei, 139, 141
Prefollicular tissue, 142, 145
Primordial germ cells, 148
Pristiphora erichsonii (larch sawfly), 294, 459
Prodenia eridania
  diet requirements, 59
    amino acid utilization of, 60
    vitamins in diet of, 66
  tympanal organs of, 94
Promecotheca reichei (coconut leaf-mining beetle), 294-95
Propyl isome, 403
Prosimulium hirtipes, 253
Prospaltella clypealis, 298
Prospaltella opulenta, 298
Prospaltella perniciosi, 299
Prospaltella smithi, 298
Proteins, insect nutrition, 60-61
Proteus vulgaris, 65
Protoparce quinquemaculata, (tomato hornworm), 393
Protoparce sexta (tobacco hornworm), 393
Protura, 181
Prunus avium, 314
Psallus seriatus, 392
Pselaphidae, 223-24
Pseudaletia unipuncta (armyworm), 378
Pseudaphycus malinus, 297
Pseudococcidae (mealybugs), 296-97
Pseudococcus adonidum (long-tailed mealybug), 297, 306
Pseudococcus citri, 44
Pseudococcus comstocki (Comstock mealybug), 297
Pseudococcus gahani (citrophilus mealybug), 297
Pseudococcus njalensis, 297
Pseudopolydesmus serratus, 22
Pseudosarcophaga affinis
  fat in diet of, 61
  synthetic food for rearing of, 303
  vitamins in diet of, 65, 66
Psiliopholis, 317
Psocoptera
  distribution of, 220
  ovary type of, 143
Psorophora confinnis, 415
Psorophora discolor, 415
Psychodidae, 261
  biting or not, 261
  feeding habits of, 256-57
  maxilla of, 189
  tentorium, absence of, 185
Psychodinae, 256, 259
Psyllidae, 220
Psylliodes chrysocephala (cabbage stem flea beetle), 386, 388
Pterobosca, 254
Pteromalus puparum, 293
Ptinus, 191
Ptychomyia remota, 291-92
Ptychopteridae, 189
Pupation, 319-21
Pustule scale, see Asterolecanium pustulans
Puto, 41
Pyraemis cardui, 458
Pyralidae, 199-200
Pyrausta nubilalis (European corn borer), 381
  biotypes of, 283
  comparison with Popillia japonica eradication, 341-43, 347
  control of
    by insecticides, 381
  corn resistance to, 277-79, 281-82
  host specificity, 69, 70
  inherited factors in, 284
  nutritional requirements of, 57, 58
    carotenoid utilization, 63
    chemical diets, 58
    fat, 61
    nucleic acid, 68
    sugar requirement, 59
    vitamins, 63-67
  resistant plants for, 269, 271, 272
Pyrenone, 411
Pyrethrum
  control
    flies, 403, 404, 408-11, 414
    potato leafhopper, 423
    spittlebug, 437
Pyridoxine, 65
Pyrophorus, 328
Pyrophorus luminorus, 328

Q

Quarantine
  recent developments in, 337-38
Quercus (oak), 423

R

Race development, 210
Rapid plant bug, see Adelphocoris rapidus
Red ant, see Formica rufa
Red-legged earth mite, see Halotydeus destructor
Reductors of femur, 197
Reindeer warble-fly, see Hypoderma tarandi
Resistance of plants
  antibiosis in, 279-83
  biotypes in, 283
  inheritance of, 283-84
  to insects, 267-90
  preference, 279
  tolerance, 279
Reticulitermes flavipes, 325
Retractor of hypopharynx, 195
Retractors of prementum, 195
Reversion disease of black currants, 471
Rhagio, 258-60
Rhagionidae, 257-58, 261
Rhagium inquisitor, 53
Rhizotrogus, 329
Rhodnius
  resorption of oocyte in, 252
  symbiotes of, 38, 39, 40, 49
    elimination of, 43, 46
Rhodnius prolixus, 3
  oocyte of, 149
  trophocyte of, 153
Rhododendron, 250
Rhopalosiphum fitchii (apple grain aphid), 268
Rhopalosiphum maidis (corn leaf aphid), 276, 284
  resistance to, 268, 272
Rhopalosiphum pseudobrassicae, 386
Rhyacionia buoliana (European pine shoot moth), 452
Rhyacophila, 191
Rhyacophilidae, 186, 191, 193
Rhyzopertha, 42
  symbiote elimination in, 45
Riboflavin, 64-65
Ribonucleic acid, 154
Ricinus communis (castor bean), 423
Rickettsia, 40, 327
Rickettsia melolontha, 327
Roach, 150, 152
  see also specific names
Rhodolia, 299
Rotenone
  control of
    bean pests, 385
    corn borer, 381
    cruciferous pests, 387
    flies, 412
    pea pests, 385, 431
    spittlebug, 437
Rubus, 251
Rubus stunt, 470

Rumex, 426
Rutelinae
  classification of, 311
  food habits of
    adult, 312, 313
    larvae, 316, 317
    life cycle length, 321, 323
    pupation habits of, 320, 322
Ryania, 381

S

Sabatinca, 188, 199
Saissetia nigra, 301
Saissetia oleae (black scale), 300-2
Salix, 251
San Jose scale, see Aspidiotus perniciosus
Saprophagous, 312
Sarcophagidae
  synthetic food for, 303
Sarcophaginae, 223
Sarcoptes scabiei suis, 368
Sarophaga, 7, 33
Saturniidae, 221
Sawflies, see also specific names, 190
Scale, 41
Scaptobius, 325
Scarabaeidae, 325-26
  biology of, 311-34
  food habits of, 312-18
    of adults, 312-15
    of larvae, 315-18
  life cycle length, 321-24
  mating habits of, 324
    sites of, 324
  natural enemies, 326-29
    bacteria, 327
    fungi, 327
    insect parasites, 326-27
    rickettsiae, 327
    vertebrate predators, 328-29
  nidification, 318-19
  number of molts, 319
  pupation habits, 319-21
Scarabaeoidea, 311
Scatopsidae, 259
Scepsidinae, 259
Schistocerca gregaria
  carotenoids utilization in, 63
  fat in diet of, 61
  swarm cohesion, 98
  vitamins in diet of, 66
Schizohelea leucopeza, 256
Schradan
  control of
    bean pests, 384
    corn earworms, 381
    cotton pests, 391-93
    cruciferous pests, 386-88
    pea pests, 384, 431
    potato pests, 388, 389
    tobacco pests, 395
Scobicia, 42
Scoliidae, 224, 326
Scolopidial organs, 93-94, 96
Scorzonera hispanica, 76
Scutellista cyanea, 301
Seaside earwig, see Anisolabis maritima
Sense organs, 30-31
Sercoides, 317
Serica, 320-21, 324
Serica orientalis, 321
Sericesthis pruninosa, 327
Sericini, 317
Sex
  attraction, 32
  determination
    Apis mellifera, 162-66
    in Culex pipiens group, 234
    multiple sex-allele hypothesis, 166
  mating and light intensity, 305
  ratio of laboratory stocks, 305-6
  Scarabaeidae mating habits, 324
Sheep ked, see Melophagus ovinus
Sheep maggot fly, see Lucilia sericata
Shell OS 1808, 408
Shizochelus, 317
Sialis, 140
Silk-press, 196
Silkworm, see Bombyx mori
Simuliidae, 253-54
  Ethiopian, 222
  lateral labral retractors, 187
  maxilla of, 189
  sense organs of, 261
  tentorium of, 185
Simulium damnosum, 253
Simulium griseicolle, 253
Simulium orticum, 253
Simulium rugglesi, 253
Simulium venustum, 254
Simulium vittatum, 253
Sinoxylon, 42
Siphona, 260
Siphona irritans (horn fly), 336, 410
Siphonaptera
  abdominal appendages, 198-99
  cleavage line, 183
  cranial flexor of dististipes, 191
  distribution of, 223
  labium of, 194-96
  labrum of, 186
  maxilla of, 188, 189
  origin of antennae, 188
  Panorpoidea ancestor and, 202
  stipital extensor of dististipes, 192
  stipital flexor of dististipes, 193
  tentorial adductors of basistipes, 190
  tentorial adductors of cardo, 190
  tentorial bridge of, 185
  thoracic legs of, 197
  tracheal system, 199-200
Sitodrepa, 49
Sitona, 440
Sitona cylindricollis (sweetclover weevil), 269, 383, 440
Sitophilus, 45
Sitophilus granarius, 44
Sitophilus oryza (rice weevil)
  plant resistance to, 268, 272, 274
Sitotroga cerealella (Angoumois grain moth), 302, 304
Sminthurus viridis (lucerne flea), 382
Snake mite, see Ophronyssus natricis
Sodium fluosilicate, 427
Solenopsis saevissima var. richteri (fire ant), 348, 351
Sorghum, 273, 275
Sound
  behavior of insects, 96-102
  and control, 101-2
  production of, 87-93
    acoustical analysis of, 88
    effect of environment on, 92-93
    methods of, 87
    morphology of organs, 87-88
    physiology of, 88-92
  reception of, 93-96
    evidence for, 93
    scolopidial organs in, 93-96
    tactile hairs, 96
  responses to other species, 98
  in sexual behavior, 99
  types of mating, 101
  uses of by insects, 87-106
    communication signals, 96-101
    evolutionary significance of, 101
    Faber's classification, 97
Spaniopsis, 258
Speciation in mosquitoes, 231-48
Sphinx lugustri, 64

Spiracular nerves, 3-4
Spissistilus festinus (three-cornered alfalfa hopper), 268, 440
Spotted alfalfa aphid, see Therioaphis maculata
Spotted wilt of tomato, 471
Spruce budworm, see Choristoneura fumiferana
Staphylinidae, 212
Stauroderus, 475
Stegobium, 43, 45, 52
Stegomyia, 240, 241, 245
Steneotarsonemus pallidus (cyclamen mite), 301, 367
Sterols, 62
Stictococcus, 48
Stictococcus diversiseta, 43
Stictococcus sjoestedti, 43
Stigmella, 194
Stilpnotia salicis (satin moth), 459
Stipital extensor of dististipes, 192-93
Stipital flexor of dististipes, 193
Stomoxys calcitrans (stable fly), 260, 406
Strategus, 318, 320
Strategus antaeus, 319, 323
Strategus mormon, 319
Strategus quadrifoveatus, 314, 319, 323
Stratiomyidae, 185, 200, 259
Strawberry crinkle virus, 474
Strepsiptera, 181
Streptomyces-albus group, 369
Strigoderma arboricola, 317, 323
Striped cucumber beetle, see Acalymma vittata
Stripe disease of rice, 470
Strobane, 403, 437
Styloconops albiventris (sand fly), 413
Sugar beet leaf crinkle, 470
Sugar beet savoy disease, 470
Sulfoxide, 403
Sulphenone, 363-64, 366-71
Sulphur
  as acaricide, 367
  control of
    alfalfa pests, 429
    potato leafhopper, 423
Suragina longipes, 258
Sweetclover weevil, see Sitona cylindricollis
Sweetclover (Melilotus), 382
Sweetclover aphid, see Myzocallidium riehmi
Swollen shoot disease of cacao, 297
Sycorax, 256
Symbiosis
  definition, 37
  elimination of microorganisms in, 43-47
    effects of, 45-47
    method of, 43-45
  evolution and, 39-40
  internal, 37-56
  microorganisms in, 47-52
  origin of associations, 39-40
  symbiotes
    culture of, 50-51
    effects of the insect on, 51-52
    histochemical properties of, 49
    host balance and, 52
    in oocytes, 149
    polymorphism, 49-50
    properties of, 47-49
    specificity of, 52
Symbiotes, see Symbiosis, symbiotes
Symphoromyia, 258
Symphyla, 181
Symphyta, 198
Synthetic media, 282
Syrphidae, 260
Systematics
  and zoogeography, 207-8
  see also Classification

T

Tabanidae
  feeding habits of, 257-58
    blood-sucking, 261
  history of distribution of, 223
  as predators of Scarabaeidae, 327
Tabanids, 328
Tabanoidea, 261
Tabanus
  feeding habits of, 257, 258
Tabanus autumnalis
  feeding habits of, 258
Tabanus quinquevittatus, 411
Tachinidae, 326
  as parasites for Scarabaeidae, 326
Tactile hairs, 96
Taiga fauna, 214
Tanna japonensis, 91
Tanyderidae, 261, 262
Tarnished plant bug, see Lygus lineolaris
Taxonomy
  of Culex fatigans, 244
  of Culex molestus, 244
  of Culex pipiens, 244
  of panorpoid orders, 181-204
  of Scarabaeidae, 311
  significance of characters of immature insects, 91-102
TDE
  control of
    alfalfa pests, 429
    flies, 404
    potato leafhopper, 423
    spittlebug, 437
    tobacco pests, 393, 394
Tedion, 364-66, 370-72
Temperature
  cricket, 92
  effects on
    Apis mellifera variation, 169
    bee breeding, 169
    chirp rate, 92
    sound production, 92
    virus transmission by aphids, 480
    virus transmission by leafhoppers, 474
  mosquito adaptation to, 233
  tolerances, 208, 210
Tendipedidae, 186
  abdominal appendages, 198
  labral compressors, 187
  messorial of, 187
  tentorium of, 185
  tracheal system of, 199
  see also Chironomidae
Tendipes decorus, 414
Tenebrio, 12, 143
Tenebrionidae, 224
Tenthredinids, 151
Tenthredinoidea, 224
Tentorial adductors of basistipes, 190
Tephritidae (fruit flies), 223, 296
TEPP
  control of
    alfalfa pests, 425
    bean pests, 384, 385
    corn earworms, 381
    cotton pests, 390, 391
    cruciferous pests, 386
    flies, 408
    greenbug, 380
    pea pests, 384-85, 431
    tobacco pests, 394
Terminal filament, 139, 141, 145
Termites
  cellulose utilization, 46
  Cetoniinae and, 325
  dispersal of primitive forms, 212
  nitrogen fixation and, 68
  scolopidia of, 95
  sexual cycles of protozoa in, 51
  symbiotes of, 38
    elimination of, 43
    interchange, 52
  zoogeography of, 219-20

Terpnosia, 91
Terramycin, 44
Tetracnemus peregrinus, 297
Tetracnemus pretiosus, 297
Tetranychus, 367
Tetranychus hicoriae, 369
Tetranychus telarius (two-spotted spider mite), 366-67, 369-71, 384
Tetrastichodes brontispae, 295
Tetrigidae, 99
Tettigoniidae, 90, 99
Teuchestes, 328
Thanite, 411
Therioaphis maculata (spotted alfalfa aphid), 424-26
  alfalfa resistant to, 268, 272, 276, 278
  life cycle of, 425
  parasites of, 425
Therioaphis trifolii, 425
Thermobia domestica (firebrat), 139, 140, 142
  oogenesis in, 139, 140, 142
Thiamine, 64
Thimet, 390, 392, 393
Thiram, 369
Thoracic legs, 196-98
Thrips, 392
  distribution of, 220
  feeding habits of, 280
  pest to cotton, 269, 272
  sound organs of, 88
  see also specific names
Thrips imaginis
  self-regulation of populations, 110-12, 118, 129
Thrips tabaci (onion thrips), 268
Thysanoptera, 392
  as vectors of plant viruses, 470-71
  distribution of, 220
  sound organs of, 88
Thysanura
  ovary of, 138
  thoracic legs of, 196, 198
Ticks, 22, 225
Tineidae, 184
Tiphia, 326
Tiphia popilliavora, 305, 327
Tiphiidae, 326
Tipula, 183, 187, 195
Tipulidae, 259
  cranial extensor of dististipes, 192
  labral compressors in, 187
  maxilla of, 189
  tracheal system, 200
Tipulinae, 183
Tirathaba trichogramma (coconut spike moth), 293
Tischeriidae, 190
Tobacco, 393-95
Tobacco flea beetle, see Epitrix hirtipennis
Tobacco mosaic, 471
Tobacco mottle, 472
Tobacco ringspot, 471
Tobacco rosette, 473
Tomato spotted wilt, 480
Toxaphene
  as acaricide, 367
  control of
    alfalfa pests, 425, 434
    armyworm, 379
    cotton pests, 390, 391, 393
    cruciferous pests, 387
    flies, 405, 410, 411, 416
    potato pests, 389
    spittlebug, 437
    tobacco pests, 394
Toxoptera graminum (greenbug)
  control of, 380
  early economic history of, 336
  plant resistance to, 268, 272, 284
Toxorhynchites, 250, 260
Transfaunation, 52
Transmission
  forms of symbiotic insects, 50
  of nerve impulses, 3-7
  of plant viruses by arthropods, 468-82
    selectivity of aphids, 472-73
  of symbiotes
    as egg contaminants, 39
    transovarial, 39-41
Trialeurodes vaporariorum (greenhouse whitefly), 298
Triatoma, 45, 51
Triatoma infestans, 78
Tribolium confusum, 113
Tribolium confusum (confused flour beetle), 363
Trichiotinus, 315, 318, 324
Trichoceridae, 189, 200
Trichoptera
  abdominal appendages, 198-99
  anteclypeal muscles of, 187
  classification of, 202-4
  cleavage line of, 183, 184
  cranial extensor of dististipes, 191, 192
  cranial flexor of dististipes, 191
  dispersal of primitive forms, 212
  distribution of, 220
  Eltringhan's organ, 96
  eyes of, 187-88
  labium of, 193-96
  labral compressors, 187
  labrum of, 186
  maxilla of, 188
  of Nearctic region, 215
  origin of antennae, 188
  origin of anterior arms, 185
  stipital extensor of dististipes, 192
  stipital flexor of dististipes, 193
  tentorial adductors of basistipes, 190, 191
  tentorial adductors of cardo, 190
  tentorial bridge of, 185
  thoracic legs, 196-98
  tracheal system, 199-200
Trichogramma, 292-93, 302
Trichogramma minutum, 293
Tricholoplus, 325
Trichoplusia ni (cabbage looper), 387
Trifolium alexandrinum (berseem), 424
Trifolium hybridum, 426
Trifolium pratense, 426
Trifolium repens (ladino clover), 426
Trigonopeltastes, 324
Trioxys utilis, 425
Trogidae, 311
Troginae
  classification of, 311
  food habits
    adult, 312
    larvae, 316
  interrelationships with other insects, 325
  life cycle length, 321
Trogoderma granarium (khapra beetle), 346, 349-50
Trombicula autumnalis (harvest mite), 368
Trombiculids, 225
Trophic core, 142
Trophocyte, 145, 148
Trox, 328
Trox procerus, 325
Trox suberous, 325
Trypanocorax frugileus, 329
Trypetidae, 100
Trypetinae, 223
Tsetse flies, see also specific names, 223
Tunica, 139, 141
Turnip crinkle, 471
Turnip yellow mosaic, 471, 475
Two-spotted spider mite, see Tetranychus telarius
Tychius, 440
Tychius stephensi (clover head weevil), 383
Tympanal organs, 94, 96
Typhlodromus cucumeris, 301
Typhlodromus reticulatus, 301

U

Uranotaenia lowii, 250

V

Vaccinium, 253
Vagility, see Zoogeography, dispersal
Valgus, 324, 325
Valgus californicus, 325
Valgus canaliculatus, 315, 325, 326
Valgus seticollis, 325, 326
Velvet bean caterpillar, see Anticarsia gematilis
Vermileo, 258
Vicia, 424
Vigna sinensis, 471
Vinca rosea, 476
Viruses
  plant
    effect on their insect vectors, 476-78
    factors affecting insect-transmissibility of, 477
    factors influencing the spread of, 478-80
    feeding habits of vectors, 479
    intrinsic properties of in relation to transmission, 480
    mechanical transmission, 471-72
    movement of aphids, 479
    multiplication in insect vectors, 473-75
    mutation of, 476-78
    nonpersistent and persistent aphid-borne, 472
    proximity of virus and vector sources, 479
    selective transmission by aphids, 472-73
    transmission by mandibulate insects, 475-76
    transmission by arthropods, 469-82
Vitamin B_2, 78
Vitamin B_{12}, 64, 78
Vitamin B_T, 66
Vitamin C, 77
Vitamin PP, 78
Vitamins, water-soluble, 63-67
Vitellarium, 139, 143
Vitellogenesis, 148-57
  cytological studies, 150-54
  germinal vesicle and, 140
  histochemical studies of, 154-57
  and ovarian structure, 137-57
  trophocyte nucleus and, 145, 146

W

Wasp, 10
Wax moth, see Galleria mellonella
Wegenerian Hypothesis, 211-12
Wheat
  pests of, 379-80
  resistant varieties of, 273, 275-77
Wheat jointworm, see Harmolita tritici
Wheat stem fly, see Cephus cinctus
Wheat strawworm, see Harmolita grandis
Wheat streak mosaic, 471
Wheat wireworm, see Agriotes mancus
White-fringed beetle, see Graphognathus leucoloma
Wireworms, see Elateridae
Woolly apple aphid, see Eriosoma lanigerum

X

Xanthomonas citri, 339-40
Xenopsylla, 193
Xyloryctes jamaicensis, 323
Xylosma raremosum, 76

Y

Yellow bean mosaic, 431
Yolk
  bodies, 149, 150
  lipide
    origin of, 152-53
  precursor, 233
  protein
    chemical nature of, 155-56
    origin of, 150

Z

Zeadiatrae grandiosella (southwestern corn borer), 268, 278, 280
Zethini, 225
Zeugloptera
  abdominal appendages, 198-99
  cleavage line, 183
  cranial flexor of dististipes, 191
  eyes of, 187-88
  labium of, 193, 194, 196
  labrum of, 186
  maxilla of, 188
  origin of antennae, 188
  origin of anterior arms, 185
  phylogeny of, 202
  status of the order, 202-4
  tentorial adductors of
  tentorial bridge of, 185
    cardo, 190
  thoracic legs of, 197-98
  tracheal system, 199-200
Zinc arsenite, 434
Zineb, 369
Zonocopris gibbicollis, 312
Zonosemata electa (pepper maggot), 269
Zoogeography, 207-30
  Antilles speciation, 215
  Atlantic islands fauna, 214
  Baltic aquatic glacial reflects, 214
  British Isles fauna, 214
  California aquatics, 215
  dispersal, 208-9
    air, 209
    and ecology, 209-210
    humidity and, 210
    movements of man and, 209
    passive, 209
    rates, 208
    temperature and, 208, 210
  distribution of groups, 219-25
    Andean forms, 216
    Arachnida, 225
    Coleoptera, 223-24
    Collembola, 219
    Diptera, 221
    Ephemeroptera, 219
    Hemiptera, 220
    Heteroptera, 220
    Hymenoptera, 224-25
    Lepidoptera, 221
    Myripoda, 225
    Odonata, 219
    Orthoptera, 219-20
    Plecoptera, 219
    Psocoptera, 220
    Siphonaptera, 223
    Thysanoptera, 220
    Trichoptera, 220
  Falkland Islands fauna, 216
  Galapagos beetles, 216
  Gondwanaland Theory, 216
  methods of, 208
  regions and subregions, 211-19
    altitude separations, 215
    Amphiberingia, 219
    Australian, 218-19, 221, 222
    Cenozoic connections, 213
    Ethiopian, 216-17, 222, 223, 224
    Gondwanaland, 219
    Greenland, 215
    Holarctic, 211, 213, 219-22, 225
    Lemuria, 216
    Madagascar, 216

Malagasy, 216
Nearctic, 214-15, 222-23, 243
Neotropical, 215-16, 219, 222-24
Oriental, 217-19, 221-23
Oriental-Australian boundary question, 217
Parearctic, 213-14, 217, 220
Paleotropical, 219
Papuan, 218
Vancouveran, 215
South American speciation, 215, 216
Tierra del Fuego forms, 216
Wegenerian Hypothesis, 211-12
Zootermopsis nevadensis, 325
Zoraptera, 181